

SUBSISTENCE RESOURCE UTILIZATION: NIKOLAI
AND TELIDA - INTERIM REPORT II

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ABSTRACT

The Subsistence Section of the Alaska Department of Fish and Game conducted initial research in the Upper Kuskokwim region this past summer, as well as during a few short village visits in the fall (1980) and one in February 1981.

The primary focus of research was the subsistence resource utilization of the two Athabaskan communities of Nikolai and Telida. The two villages exist in an area of low biological carrying capacity and are facing some chronic resource problems. Because of limited field work, the only detailed data compiled were on fishing and hunting efforts for 1980 in addition to some general trapping information. The fishing season was examined in relation to changes in effort and effort locations since the 1960's and some of the possible reasons behind those changes. The hunting season for moose this September proved to be a poor one for the villagers in that it fell during an unseasonable warm period. The patterns of utilization of moose by residents of these communities are examined in some detail. The role of caribou in the 1980 subsistence cycle is also discussed. The consequences of incongruities between regulations and established use patterns is examined and some preliminary recommendations are made.

Purpose of Research

Research in the Upper Kuskokwim area was undertaken by the Subsistence Section of the Alaska Department of Fish and Game (ADF&G) because of the many critical resource problems confronting this area and the dearth of previous similar research. The intent of the Section was to gather extensive subsistence data throughout the Upper Kuskokwim including socioeconomic, cultural and ecological considerations. It is expected that it will take a few years to gather the extensive amount of data required to develop a holistic picture of local wild resource utilization in the Upper Kuskokwim. The following represents the second interim report of findings.

During the first year of subsistence research in the Upper Kuskokwim River area, the focus of attention was the two small Athabaskan communities of Nikolai and Telida. The communities of Medfra, Takotna, and McGrath will be included in future research efforts. The Upper Kuskokwim area has been one of the most remote in the State, and the local population has traditionally been oriented toward subsistence resource utilization (Hosley, 1966; Collins, personal communication, 1980-81). Consistent with trends throughout Alaska, improved modes of transportation and communication have made Nikolai and Telida more accessible in recent years. This has made some aspects of life easier for the villagers, but it has created some problems. The proximity of this region to the municipalities of Anchorage and Fairbanks has led to a situation in which the game resources, especially moose, have been subject to some competition from urban hunters as well as boat hunters from downriver Kuskokwim communities. This outside hunting, even if minimal, in combination with annual village take, marginal moose habitat, a high wolf population and an increasing bear population

have all acted to keep moose at a low density in this area (Shepherd, personal communication, 1980). Moose is the most important food item in the local diet, so the increased competition for this resource has been a source of concern to local villagers. Moreover, the alternative subsistence resources present in the area (notably salmon, whitefish, and caribou) have not always been available to the villagers at appropriate times or in adequate numbers to be dependable buffers for inadequate moose harvest.

Increased competition for a limited resource has prompted the McGrath local Fish and Game Advisory Committee to request the Board of Game, both in January 1980 and 1981, to implement a Controlled Use Area around the Upper Kuskokwim above Big River (upper GMU 19D). This regulatory category was not open for consideration at the March 1980 meeting; so the proposal has been resubmitted this year and will be considered in March 1981. At the March 1980 meeting the September hunting season in upper GMU 19D was restricted to ten days and the November season was repealed. This short season was an attempt to relieve hunting pressure on the local herd as well as to discourage nonlocal hunting efforts. However, at this same March 1980 meeting, Board of Game member Sidney Huntington recommended that this area be considered for designation as a Subsistence Hunting Area. This prompted the Board of Game in the December 1980 meeting to direct the Game Division to start the process of establishing public hearings as required by statute.

The Section has been undertaking research with the intent of developing an accurate picture of subsistence resource utilization in this area of the Upper Kuskokwim. Because of the resource problem faced by the two villages, accurate

information is needed to improve dialogue between the villagers and the resource managers before any resolution can be attempted.

Methodology

Methodology in the Upper Kuskokwim during 1980-1981 consisted of short village visits. Two short introductory visits (one and two days, respectively) to McGrath and Nikolai were made in late May and early June 1980. During these visits knowledgeable people, including the area game biologist, were contacted for information. The trip to Nikolai served to contact village council members for support and cooperation and to gather preliminary data.

The major Section visit occurred in late July - early August 1980; seven days were spent in Nikolai and three in Telida. The Section conducted a stratified sample of interviews with at least one individual from each family group in the community, and initial mapping of important local wild resource areas was conducted. Thirteen out of 21 households in Nikolai were interviewed and mapped as were 5 of the 7 Telida households (62% and 71% respectively). In addition to village interviews and researcher observations, fishing areas and a fish camp were visited. An attempt was made to assess the substance of village life and concerns.

Nikolai was visited both during and after the moose season of 1980. During this time there were two department observers in the area, mainly to assess the level of floatplane activity. At the time of the preseason visit, the researcher

gathered additional data on the summer's fishing season. The post-season trip was made to assess village success during the ten-day moose season. A representative of Telida was contacted during this latter trip for the same purpose.

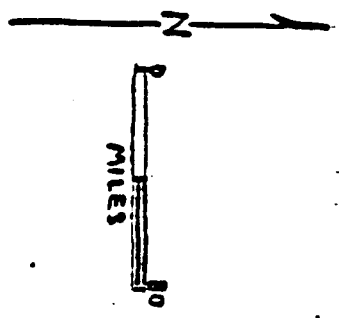
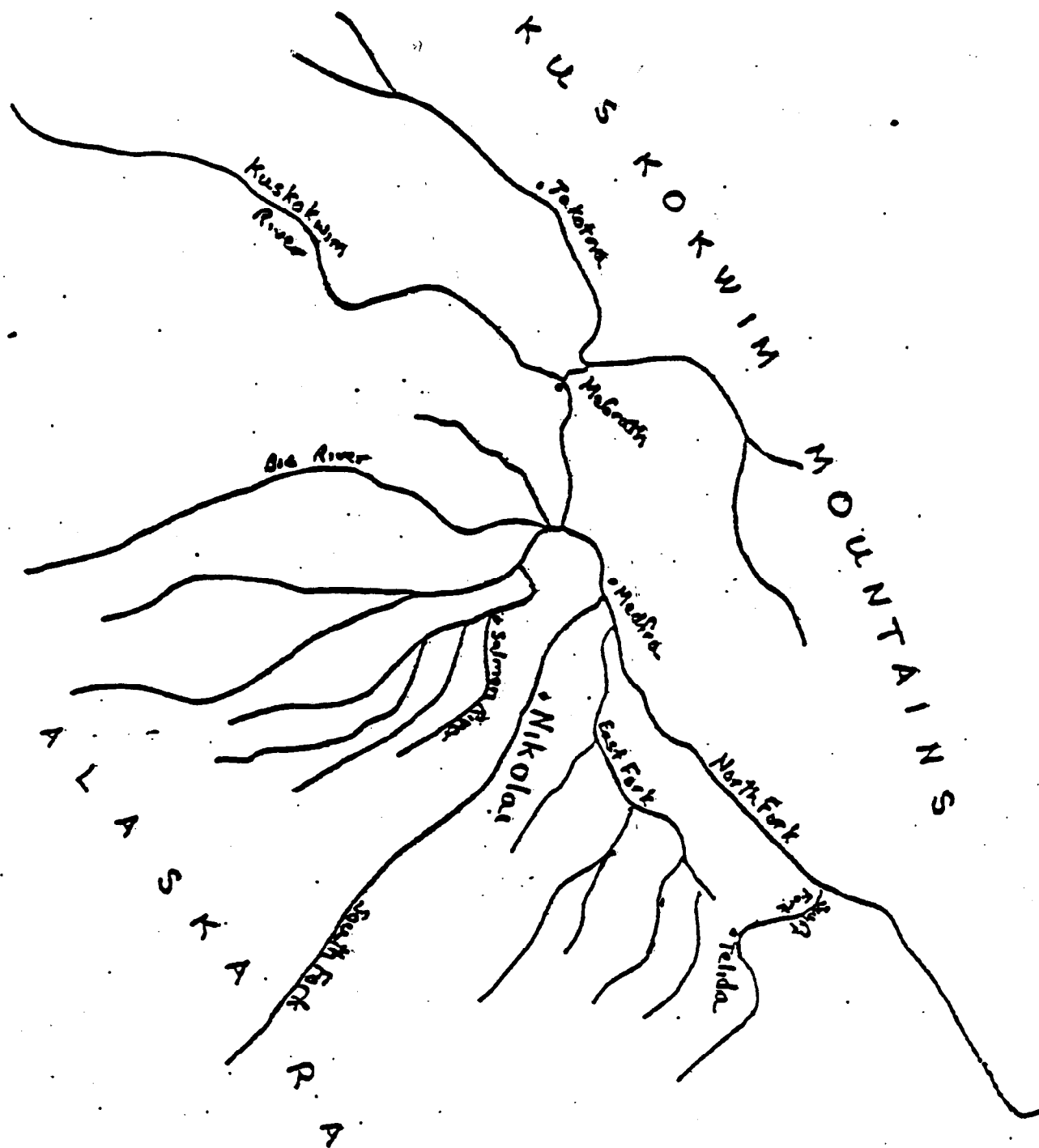
A four day visit was made in February to both villages. At this time some additional hunting and general trapping information was gathered along with general observations on village activities and winter food stores. A winter field visit was important to gather information on seasonal variability of local resource harvest and utilization.

Background

Nikolai and Telida are two small, predominantly Athabaskan communities located northeast of McGrath on the South Fork and on the Swift (McKinley) Fork of the Kuskokwim River respectively (see Map 1). Both communities have traditionally been highly dependent the local natural resources for food and raw materials. Historically, the Upper Kuskokwim has been an area of low biological carrying capacity; and the early Athabaskans of this area adapted to this constraint by pursuing an adaptation based upon small roving family bands (Hosley, 1966; Zagoskin, 1967; Oswalt, 1968). These family groups seasonally followed the migratory patterns of local fish and game natural resources and aggregated into larger groupings only at those times during the year when the available resources were adequate for such gatherings.

Despite the low carrying capacity of the area, it was sufficient to support the earliest sites of the communities of Nikolai and Telida in the early 1900's.

MAP 1.



The settlements were the result of white influence (trading post, priests, etc.) and were small at their creation but later attracted related family bands throughout the Upper Kuskokwim area. These communities had to change their location in the early years in response to environmental and resource conditions, but the introduction of schools, the growth of the mining community of McGrath and other factors have all acted to cement the communities where they are now and effectively to reduce the land base on which they can support themselves. The communities themselves have gradually increased in population, although the increase in Telida has only been within the last decade. Due to the contribution of many factors, the communities are now facing some chronic resource problems which affect the subsistence economy that is still the mainstay of these villages.

Community Profiles

Nikolai: Nikolai has a population over 90, with 20+ households. Its present location is on the South Fork of the Kuskokwim River, over 30 miles southeast of Medfra and downstream from its earlier location. Nikolai has a store, electricity, small gravel airstrip, Russian Orthodox Church, community hall, village steambath, town office, small sawmill and school with gymnasium (pre-school through 10th grade). Jobs include some village organization employment (council, administration, etc.) guiding for outfitters or directly for clients, trapping, working at the school, post office and sawmill plus occasional construction projects and firefighting. None of these jobs, however, is funded at a full-time, permanent level; and the majority of the households would have only a single member employed during two months or less during the year (e.g. firefighting, guiding) or only part-time during the larger portion of a year (e.g. school

bilingual teacher or cook). All commercial foods are flown in from McGrath, and only fuel and lumber are brought on the occasional barge that comes up from McGrath. (Prior to six years ago there was no store within the village and food purchases were made primarily from Medfra and McGrath directly.) What little cash is available to the community is supplemented by public assistance, but village residents are still primarily dependent on local resources.

Telida: Telida is a small village situated on the west bank of the Swift (McKinley) Fork of the Kuskokwim River, 17 miles upstream from its confluence with the North Fork and 5 miles downstream from the outlet of Telida Lake. This past summer, there were 7 families living there with a population of 31. By this fall, however, one family had moved elsewhere on the Upper Kuskokwim leaving only 6 families with total of 24 people. The village has a grade school, small dirt airstrip, Russian Orthodox Church, village steam bath, town office and community hall that is being converted to a health clinic and housing for the teacher. There is no store and all food and fuel must be shipped by air from McGrath or elsewhere; there is no barge service. The village has a generator which basically powers the school but is turned off during the summer months to curb expenses. Because of the village's small size, it is not always certain the school will be opened by the Iditarod REAA. When it does not open, the school children must go to Nikolai in order to attend school. The few part-time job opportunities include school and airstrip maintenance, a health aide position and occasional small scale construction projects plus intermittent firefighting. Although this scarcity of available cash is supplemented by public assistance, the village remains primarily dependent on the harvest of local biological resources. Telida is also

situated near the new Denali Monument extension. Inadequate information about status of the village in the monument's resident subsistence zone has confused Telida residents who utilize the area. Telida is situated in an even poorer resource area than is Nikolai, and existence in the community is tenuous.

Both communities have been involved in a pilot garden project fostered by the Tanana Chiefs Conference and Koyukon Development Corporation. The project seeks to improve the self-sufficiency of the villages by broadening the amount of fresh food available in the diet. This project seems to be doing well despite too much rain during the summer of 1980.

Subsistence Resource Utilization

As previously discussed, preliminary information on village resource utilization was gathered in the summer, and fall of 1980 and in February 1981. Because of the limited field time involved, only moose hunting and salmon fishing information were gathered in any detail.

Appendix A includes maps of general areas of resource utilization for the villages. As has already been noted, the information used to compile these maps came from the 62% stratified sample of households in 1980 and should not be construed to be the full extent of resource utilization. In addition, the boundaries represented on these maps should not be considered rigid in time and space. As resources migrate or populations change in magnitude or as environmental conditions change through time, subsistence users correspondingly must adjust their

efforts and the locality of such efforts. Appendix B contains a general listing of potentially utilizable wildlife resources present in this area. The listing gives no indication of the magnitude of use for each species or the season of use. The list is included here to give non-local readers some idea of the wildlife components of the Upper Kuskokwim resource utilization picture and is probably not complete.

The following is a general presentation of the subsistence activities encountered during the initial period of research. This presentation is organized by major activity categories and includes data for both communities.

Fishing

Fishing patterns in the Upper Kuskokwim have changed radically since the ethnographic work of Hosley in the 1960's (Hosley, 1966). At that time, many families from Nikolai moved to Medfra (35 miles downstream) in the summer in order to fish and to be available for firefighting jobs (then one of the very few jobs available).

There are now additional social and economic factors which have impacted fishing efforts and success for residents of Nikolai. While Nikolai still offers few wage earning opportunities, there are now a greater number of seasonal jobs (primarily summer), available within the village. As the use of snowmachines commenced in the late 1960's and increased throughout the early and middle 1970's, there was a corresponding decline in dog team utilization. The decline in the use of dogs in addition to the perceived need for more cash precipitated

a reduction in fishing effort and need for fish by most village residents. Therefore, relative to the 1960's, fewer families today spend lengthy periods of time in fish camps during the summer months. In addition, most people fish nearer the community in order to have access to potential employment and to reduce fuel consumption (gasoline currently costs \$2.00-2.76 per gallon). However, Nikolai is not as good an area to fish as Medfra, and in a poor fishing year the harvest at Nikolai is extremely limited. It should be noted that the number of dog teams in the village is very recently on the increase. The factors probably include inflation of snowmachine and fuel costs, increased popularity of "mushing" as a mode of transportation, recognition on the part of some people of snowmachine unreliability, and importantly, an increased valuation of dog team utilization as "traditional" since contact with Russian traders.

In order to harvest king salmon specifically, interested villagers must travel in early July to the Salmon River which is part of the Big River drainage and a day's boat trip from Nikolai (See Map 1). This is one of the few king salmon spawning areas in the Upper Kuskokwim. The "chief" of Nikolai has his native allotment at the confluence of this stream, and his extended family is the primary user group in the area. Traditionally this area was fished by using fish weirs (Hosley, 1966; Collins, personal communication 1980 and 1981), but this method is no longer allowed by regulation for the harvest of salmon. The Salmon River is too clear and shallow for fish wheels, and even set nets are not very efficient under these conditions (although one is used by the "chief"). Most other users must resort to the use of rod and reel due to regulatory restrictions and the inefficiency of nets. Last year (1979) only the "chief" and his family fished at Salmon River, but this year at least five families fished there and three of the additional families were related to the

"chief". Two of the five have dog teams and were motivated to harvest king salmon for their personal use in order to reserve more of their later chum catch for dog food. One person reported catching at least 30 king salmon while at the Salmon River, and most of the participants said that they had been able to catch as many kings as they wanted and needed for drying and personal use. However, this year provided a relatively good king salmon run on the Kuskokwim River (Commercial Fisheries data substantiate this statement).

By the middle of July most villagers who expended fishing effort at Salmon River returned to Nikolai except for the few who were still at fish camps located at Medfra and Little Tonzona Creek (15 miles upstream from Nikolai). The two village households maintaining fish camps at Medfra have dog teams, which, as previously explained, require a greater fish harvest. Both of those have access to a small cash income during the school year. The researcher had no data this year on the families fishing at Little Tonzona Creek.

The chum run on the Upper Kuskokwim in 1980 as elsewhere on the Kuskokwim, was better than the previous year. Those families who could expend the effort were able to put up enough fish for at least personal use and a few may also have gotten enough for dog use. Those villagers with dog teams noted the problem of maintaining a summer job and still having the time available to harvest and put up the number of fish needed to feed their dogs through the winter.

Fishing gear used at Medfra included chum salmon nets. At Nikolai two fishwheels were in operation in addition to gillnets. The fishwheels were put in by

specific families but were used cooperatively within the village. Those who wanted to cut fish for their dogs asked permission of the owners to use the wheel; those wanting fish for personal use were able to get what they needed from whomever was running the wheel. Gillnets were often a cooperative enterprise between relatives (i.e. extended family members). The capital investment in nets, outboards and gas was high in relation to the level of cash available in the village, fostering the pooling of resources and labor among some families.

Fishing in Telida in 1980 was also tempered by cash economic concerns. With few jobs available and the necessity for shipping all supplies by air, most resource utilization occurs within the near vicinity of the village to minimize expenditure of available cash. The Swift Fork offers relatively limited spawning opportunities for salmon and the potential fishing areas on the North Fork require a higher expenditure of gas (approximately \$5.00/gal) than the poor return in salmon warrants. The traditional fish resource in Telida has been whitefish, but even this resource has reportedly declined in recent years. The villagers usually set whitefish nets in Lower Telida Lake approximately five miles upstream. In late July, however, only one household was setting a net there and the return was 22 fish for the two days the researcher was present in the village. September traditionally has been the best time to harvest whitefish, but the villagers reported that the whitefish runs had declined to the point of being inadequate for village needs.

During the February visit of Subsistence Section researchers to Nikolai, it was apparent that most people were already out of fish for both human and or dog consumption. This resulted in the need for families to rely on the harvest of

other resources for human diet and for families with dog teams to invest a considerable amount of cash in commercial dog food.

Hunting

At the March 1980 Board of Game meeting the moose hunting season in GMU 19D upstream from the Big River was reduced to 10 days (September 10-20, 1980). The moose population in this area is not thriving and the season was shortened to relieve pressure on the herd as well as to discourage non-local hunters. The November season this year was also closed for this area. In the past few years the villagers expressed concern that they faced competition from non-local hunters utilizing floatplanes. The area game biologist in McGrath does not feel that the level of this competition is the factor keeping the moose population low, but rather believes that the major limiting factors on that particular moose population are: 1) generally poor moose habitat; 2) a high wolf (and possibly bear) population; and 3) annual village take (Pete Shepherd, personal communication, June 1980). An attempt was made this year to assess the actual level of competition for a scarce resource between local and non-local hunters by monitoring float plane activity, but environmental conditions made this question of secondary importance for this particular season. The 10-day season proved to be temporally inappropriate for village needs because it fell in an unseasonably warm period. Moose is the mainstay of both villages, and in Nikolai the villagers are constrained to travel great distances and expend considerable amounts of gasoline to get meat for their families. The North Fork is the primary place to hunt for Nikolai, although some Nikolai villagers will also travel to Big River and the East Fork (See Map 1). Telida residents hunt on the North and Swift Forks and around Red Slough. Because

this fall's season fell during a warm period, bull moose were still up in the foothills and most had not moved down to the river. It did not start to snow until the day after the season closed. Villagers said they were seeing mostly cows, a fact confirmed by a Department observer on the river. One villager from Nikolai spent all 10 days hunting, finally getting a bull on the last day of the season after expending over 100 gallons of fuel. Because he was hunting in partnership with two other relatives, the moose he shot had to be split three ways. When the Department observer left the river on the 17th of September, only four bulls had been taken by the village. A visit to Nikolai after the hunting season closed in all of GMC 19D confirmed that the 10-day season had been a poor one for the village due to the weather conditions and timing of the season.

Regulations for this area in recent years have not reflected the reality which faces residents of Nikolai and Telida--namely the need for meat on a year-round basis. Villagers have historically responded to that reality rather than to State regulation. However, as regulations have become more restrictive, those activities regularly pursued by the villages have fallen increasingly outside of the permitted system. Because moose is the most important item in the village diet, the villagers will tolerate a large expenditure of their limited cash resources to subsidize their hunting venture. This is not a luxury to them but rather a necessity they do not question. Without moose they must fall back on the store's expensive commodities without the cash base to provide a sufficient non-customary protein diet. Due to supply problems the store cannot always be relied on to provide a nutritious, adequate diet even if the cash were available. The villagers hunt for meat for the winter and they will not

return empty handed, if possible -- even if their harvest does not conform to the State's regulations.

Nikolai had access to caribou on the Big River flats during the open season this past November. The village expended a substantial effort in harvesting caribou because the September moose season had been so poor and there was no moose season in November. The village harvest utilization of caribou probably occurred at a higher level than it would have if moose had been available in greater numbers. This harvest offset a critical shortage of food and raw materials in the village and was, in effect, the substitution of one primary wildlife food source for another.

Telida also fared poorly during the moose hunting season. After the season was over the village had only four moose which would not provide adequate food and raw materials for 31 people. Because of the great distance involved in getting to the Big River, Telida villagers could not afford to continue their hunt in the McGrath area, nor could they participate in the fall caribou season available to Nikolai residents. Because of its size and age structure, Telida also does not have a large pool of hunters to draw upon. The village consists predominantly of young families with only one hunter per family available, although there are two households that are comprised of elderly people with no young hunter within the household. Two of the eligible hunters work as assistant guides in the fall and bring home wild meat as partial payment for their efforts. It was apparent from conversation and observation during the February trip that the village had become reliant on this activity as a source of large game resources, especially when the village moose harvest has been poor and the access to other

large game resources is limited. In February the two assistant guides were still waiting for a shipment of meat to come up from their employer. This meat was needed badly, since the village was virtually devoid of wild meat except that obtained from small game.

Telida, compared to Nikolai, is a poorer community both in terms of natural resources and opportunities for cash employment. Since they have no other stable adequate resource to fall back on, Telida must depend upon moose. Like most of Nikolai, Telida has no freezers and any moose taken is shared among the villagers in part to prevent preservation failure and in part to meet kin-sharing obligations. The supply of available moose meat per household does not last as long if meat is shared, but the sharing is important to ensure the entire village's survival regardless of individual hunter success.

It is of importance to note that possibly the most active subsistence resource dependent household from Telida resides, during most of the year, 17 miles downstream at the confluence of the North and Swift Forks. Although it was not possible to visit this household in February, other village residents stated that the family depends exclusively for protein on wild resources, rarely comes to Telida, and shares its harvest with relatives in the community.

Other Resource Use

Both Nikolai and Telida utilize a wide range of resources as they are seasonally available. Such alternative resources do not occur in enough quantity, quality, or regularity to substitute for moose/caribou over a long period of time, but

both historically and contemporarily these resources will carry people through short-term periods of major resource scarcity, provide necessary nutritional and dietary variation, and, in some cases, provide raw materials that can be converted into much needed cash (e.g., furbearers) or resources for barter.

These alternatives include, but not exclusively, the following:

- 1) Villagers from Nikolai will fish for whitefish in the fall until freezeup, and some winter fishing occurs for grayling and pike.
- 2) Bears will be harvested primarily in the fall when the meat is considered prime by the villagers and when the hunt can be combined with moose hunting. Special trips are not made as it is not the preferred meat in their diet. Moreover, there are still some cultural taboos about bear which concern its spiritual power to affect adversely human pregnancies. This belief precludes some households from taking them. However, some bear meat is always present at village potlatches which indicates its relative significance in village life (local informants, personal communication, July 1980 and February 1981).
- 3) Sheep hunting formerly was included in the annual migrations of the Athabaskan ancestors of the present villagers, but this activity is not pursued as frequently as in the past. The location of Nikolai requires that a special, lengthy trip to the Alaska Range be made for sheep. Sheep meat is still relatively prized -- especially by the older people in both communities.
- 4) Most households have family traplines that extend in a wide area away

from the villages. Marten is the chief fur bearer harvested, with beaver and otter also taken. Some villagers do get some lynx and wolverine but usually coincidentally with marten. This winter's trapping efforts were considered average for marten. Some people reported good harvests (200+ marten) despite the variable weather and snow conditions encountered over the course of the winter months. More people stated that they were having greater problems with their beaver harvest including overflows and other extreme ice conditions. Beaver is locally important as a source of meat as well as pelts.

- 5) Other small game/fowl taken for food include hare and ptarmigan in the winter, muskrat after breakup, and some porcupines in the summer when available. Waterfowl are also utilized; they are readily available in the near vicinity of the village.
- 6) Berry picking areas and woodcutting areas are also located in proximity to the villages, but obtaining wood as a fuel source necessitates some means by which it can be hauled (e.g., sled).

Appendix A contains the maps of important resource areas for the villages. As noted before, these areas were put together from information from sample households and should in no way be construed to be the full extent of resource utilization for the study villages. The boundaries of use areas are only approximations based on sample information. These are not fixed in time or space but will shift given the growth of the villages, changes in resource location and patterns, and other critical variables. For example, a major fire occurred in the Bear Creek area near Nikolai seven years ago. This fire

displaced at least two households' trapping areas. While much of that area is not used at present, it was extensively used in the past and the villagers hope to use it again in the future.

Conclusion

The Upper Kuskokwim villages of Nikolai and Telida are facing several resource problems that are related to the many factors described above. Low biological carrying capacity of the land, gradually expanding human populations in the area, and increased competition between local and non-local users are just some of the factors involved. The complex interplay of factors creates a situation that will not lend itself to easy resolution.

The present regulatory system is not functioning effectively either to manage the local moose population or the human harvest for the following reasons:

- 1) Because of the persisting annual requirements for moose, the single fall season and existing bag limit do not coincide with the parameters of village need. In addition, the system as it now exists is not flexible enough to respond to unpredictable, atypical conditions (i.e., climatic changes, etc.). A season that would normally fall during a period of resource availability can, under changed circumstances, become inappropriate in terms of the resource available to the villages
- 2) As regulations become increasingly strict, villagers perceive their

continued existence as depending on harvesting outside the permitted system. Not only are they then faced with having to deal with village needs illegally, but the Department ends up with harvest data that may be unreliable, therefore making sound management hard to achieve.

- 3) Since the village system is not in conformance with the regulatory system established by the Board, there is very little communication between the villagers and the managing agency (ADF&G). The amount of information available to the Department for management purposes would improve if the village residents perceived that they could express their legitimate wild game needs without fear of repercussions.

The Board of Game has a range of possible options in responding to the human/local resource situation described above. A continuation of the existing regulatory system is, of course, one of these options. However, since it is clear that the village populations and the local moose populations are currently in a tenuous state, the restriction of other competitive human usages, even if minimal, may be appropriate. Both the staff proposal for a Subsistence Hunting Area and the McGrath Advisory Committee's proposal for a Controlled Use Area in the Upper Kuskokwim would achieve a partial resolution of the regulatory problems enumerated above. It is recommended, however, that some consideration be given to the following options in conjunction with either of the above proposals:

- 1) On a one-year experimental basis, permit each household a two-moose bag limit to be taken when needed throughout the year. This would be more likely to allow biological managers to assess the impact of existing village harvest needs on moose recruitment.

- 2) Increase the number of seasons to three (fall, winter, spring) 15-day seasons spread over the period between September 1 - April 30 with a two moose per household bag limit. While more limited than option 1, this approach would be more likely than the existing system to accomplish the merging of biological and human harvest data for the benefit of both local resources and the humans who rely on these resources.

Neither option suggested above is likely to be successful in the absence of a functional informational and educational exchange between biological managers and users. It should be noted that the residents of the Upper Kuskokwim perceive, for the most part, that there is no need to move immediately into a Subsistence Hunting Area configuration if a Controlled Use Area would accomplish the elimination of competitive airborne hunting pressure. At this point in time, therefore, there is a need for a dialogue between residents and managers that has greater depth, has better participation and is more explanatory than were the February public hearings.

It should be noted that the Section will have a Fish and Game Technician's position in the McGrath Area starting July 1981 to provide extensive research time in this region. The technician's position will be filled by someone who has had long experience in the area and has an understanding of the issues facing local populations. The research effort that was started this summer will continue for the next few years. Sample households within each community will be selected as data sources. They will be asked for their cooperation in developing seasonal subsistence information. The Section will continue to make informal visits by season, gathering data by observation and interviews, and

potentially by more directed methods such as a dietary survey. Community profiles will be developed using all available public sources and Section information. Relevant trends in the Upper Kuskokwim will also be assessed for their impact on or response to changes in resource use. Time is needed to gain a more complete understanding of the problems present in the Upper Kuskokwim and how to achieve long-term resolution.

APPENDIX A

- Figure 1. General fishing areas: Nikolai.
- Figure 2. General hunting areas: Nikolai.
- Figure 3. General trapping area: Nikolai.
- Figure 4. General berry areas: Nikolai.
- Figure 5. General fishing and berry area: Telida.
- Figure 6. General hunting areas: Telida.
- Figure 7. General trapping area: Telida.

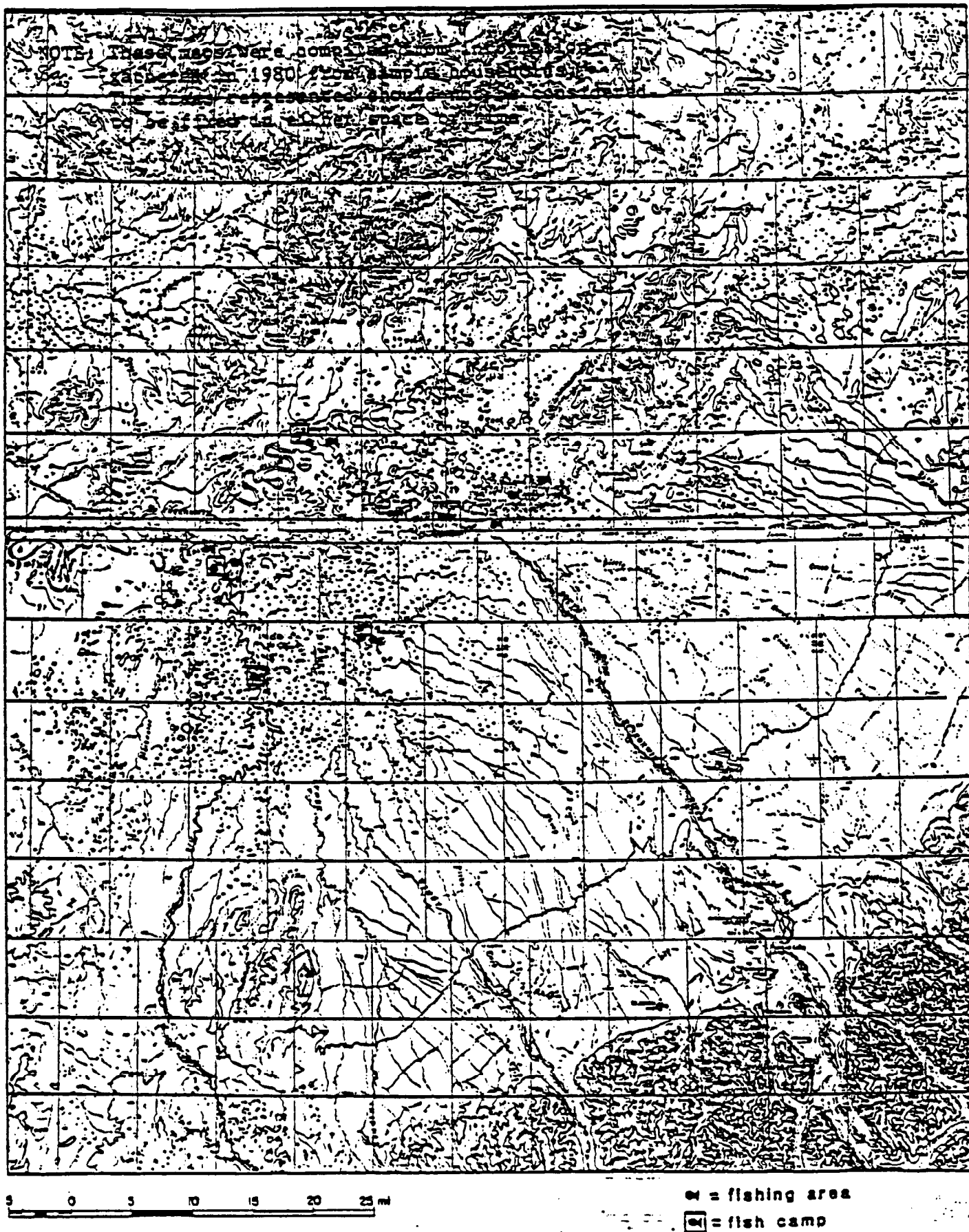


Figure 1. General fishing areas: Nikolai.

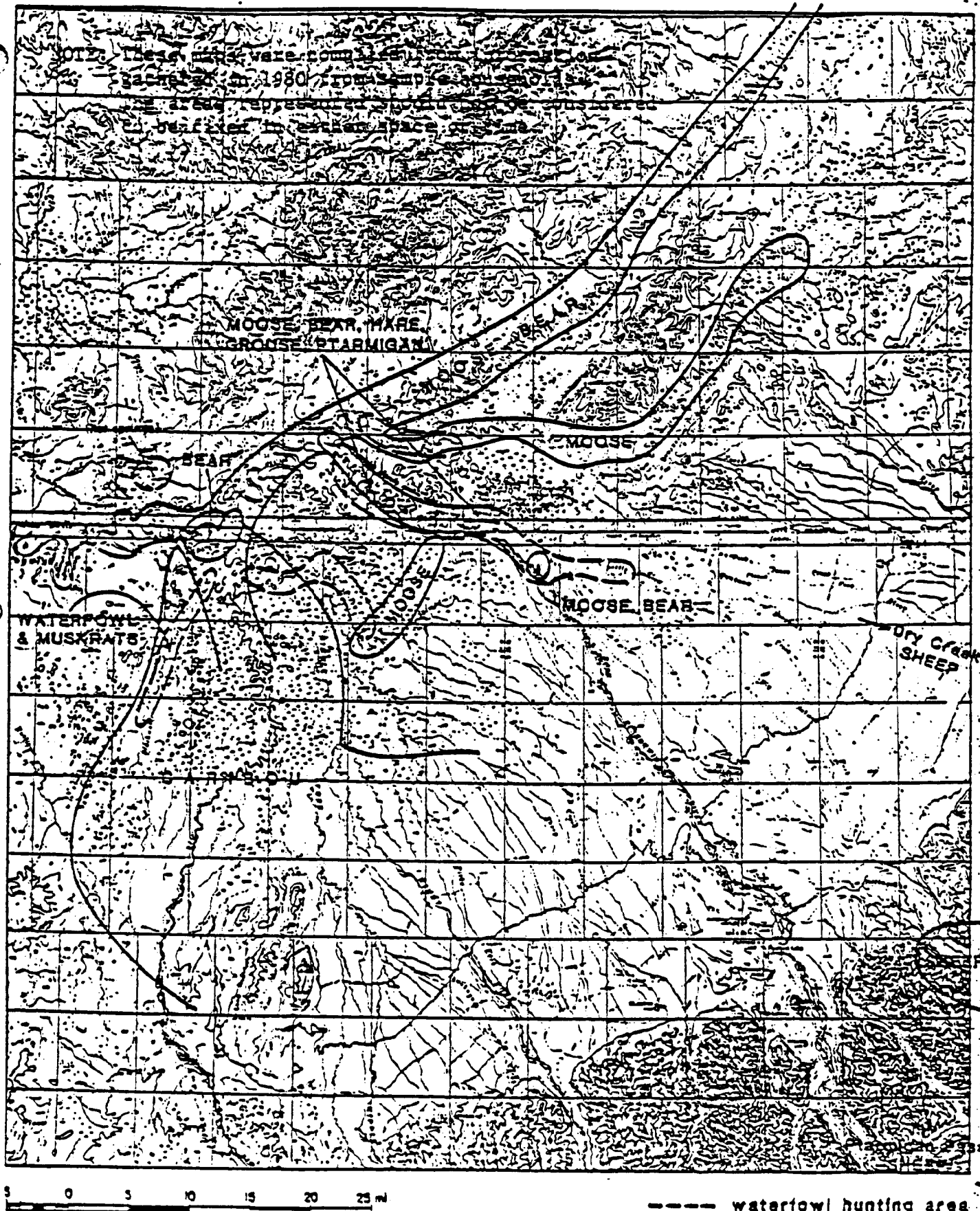


Figure 2. General hunting areas: Nikolai.



Figure 3. General trapping area: Nikolai.

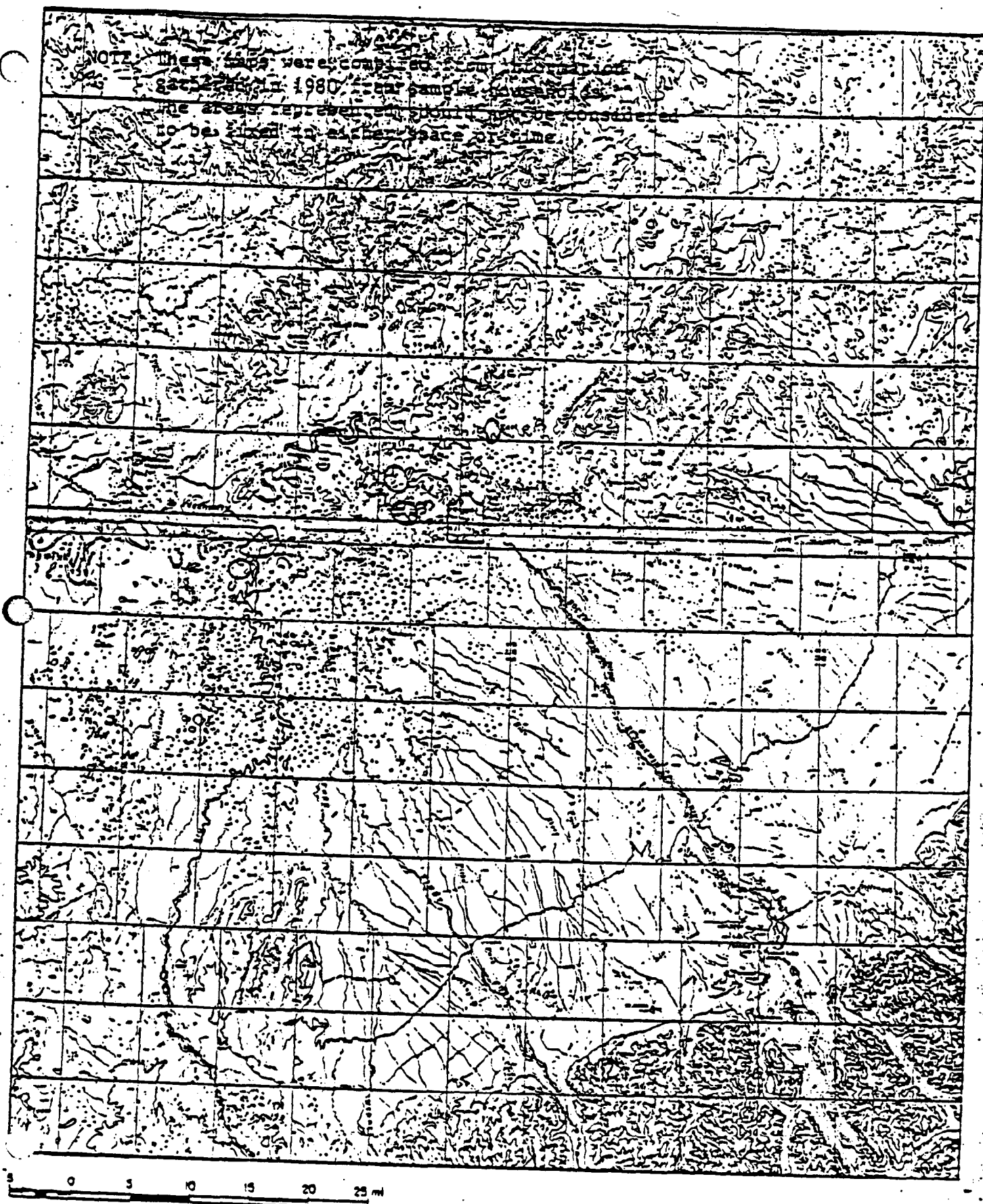


Figure 4. General berry areas: Nikolai.

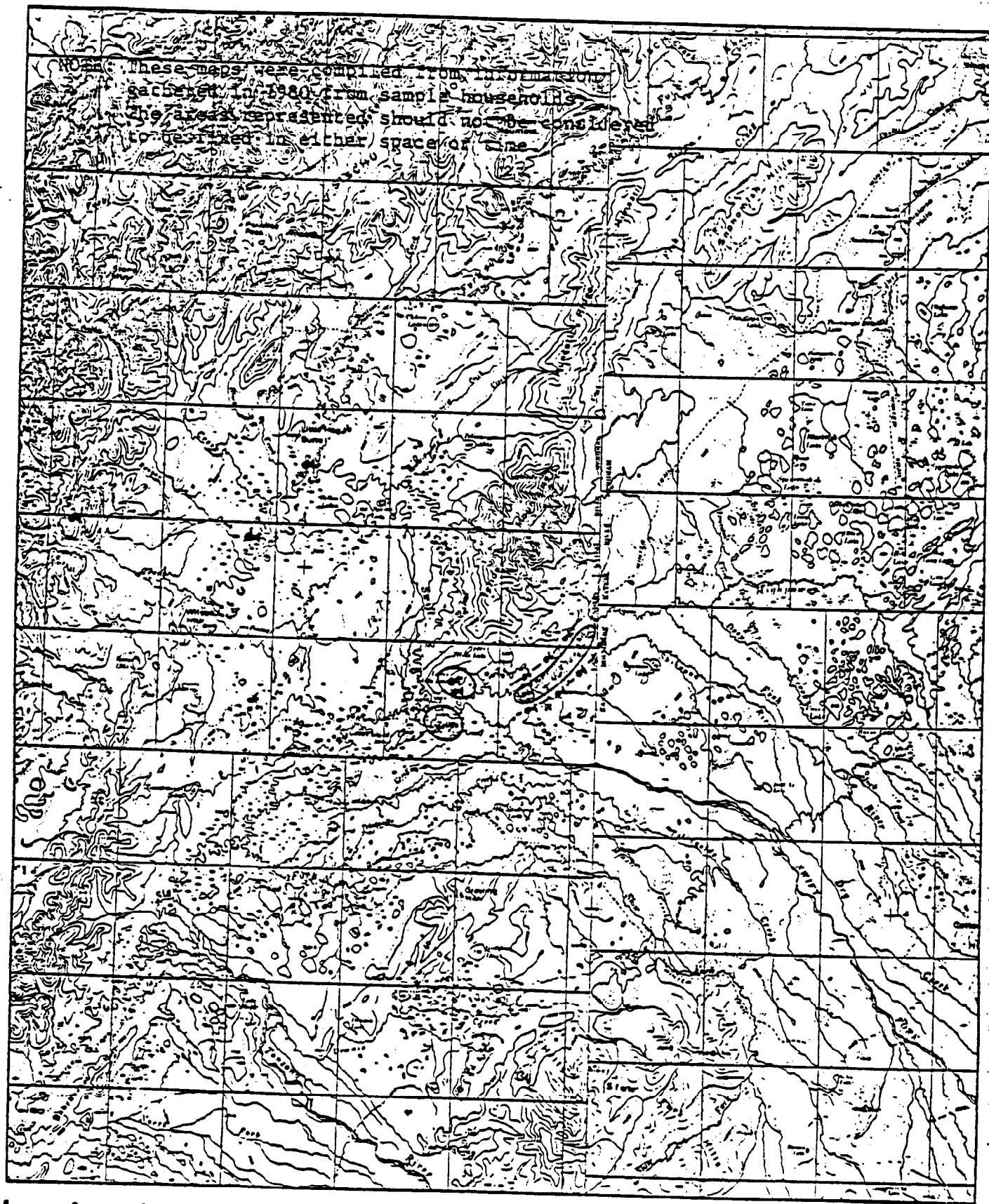
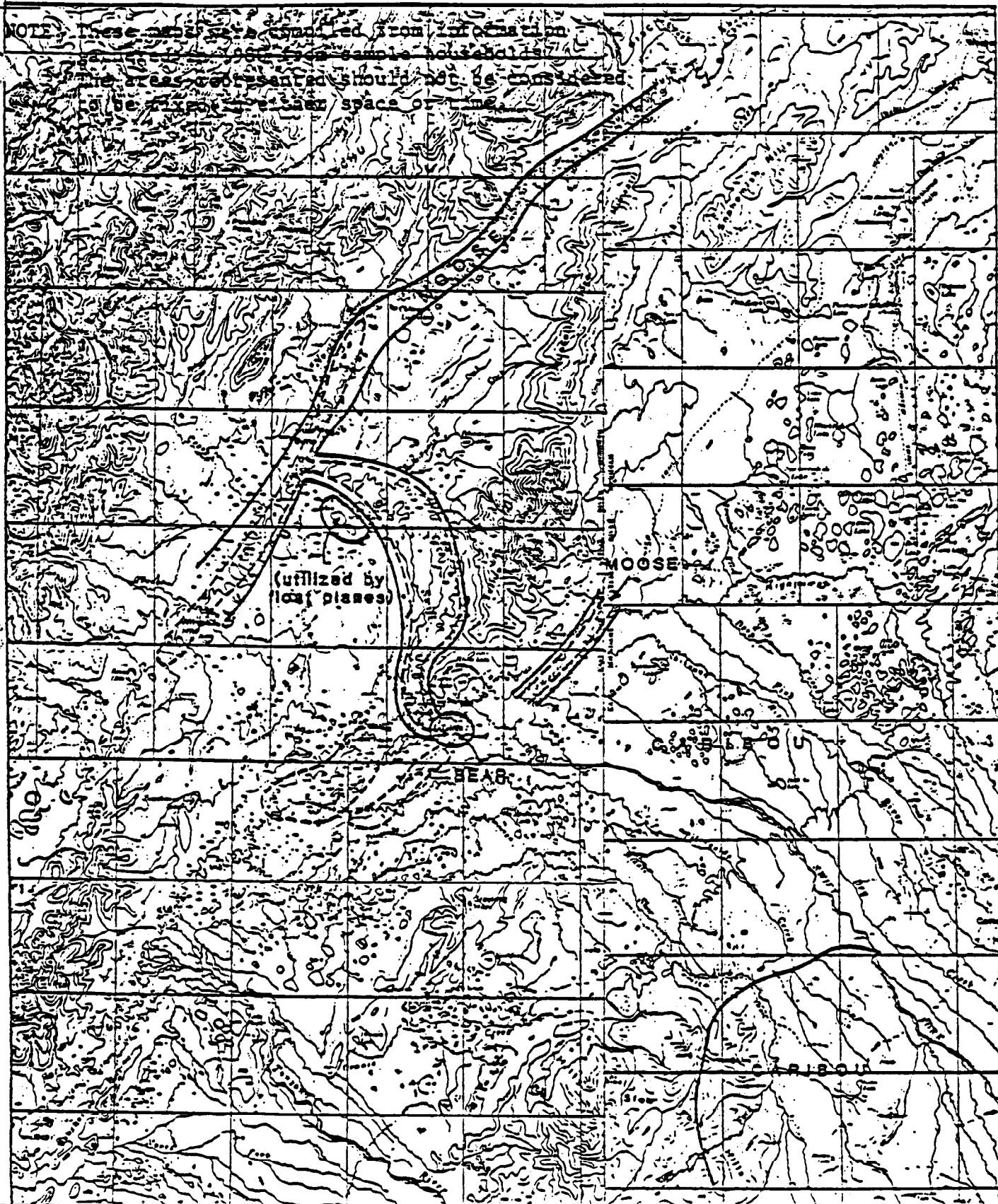


Figure 5. General fishing and berry areas: Tellda.

NOTE: These maps were compiled from information
 collected from sample households.
 The areas represented should not be considered
 to be fixed in space or time.



0 5 10 15 20 25 mi

----- waterfowl hunting area

Figure 6. General hunting areas: Telida.

These data were obtained from a questionnaire
gathered in 1990 from sample households.
The areas represented should not be considered
to be fixed in either space or time.

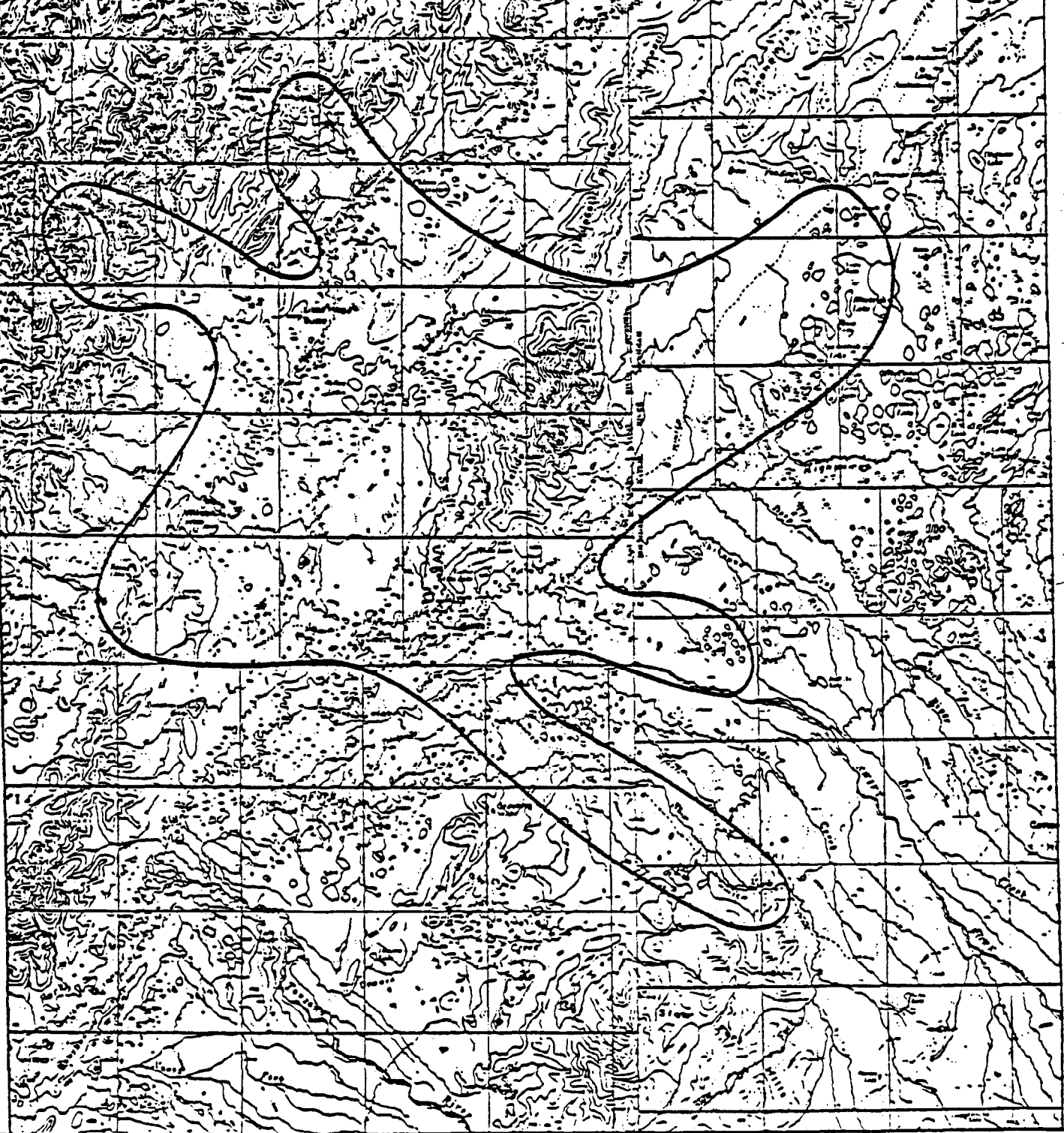


Figure 7. General trapping area: Telida.

APPENDIX B

POTENTIALLY UTILIZABLE WILDLIFE RESOURCES

king salmon

chum salmon

red salmon

whitefish

grayling

char

pike

moose

caribou

black bear

brown bear

Dall sheep

marten

mink

wolf

wolverine

red fox

beaver

muskrat

river otter

snowshoe hare

porcupine

ptarmigan spp.

waterfowl spp.

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