A PRELIMINARY BASELINE STUDY OF SUBSISTENCE RESOURCE UTILIZATION IN THE PRIBILOF ISLANDS

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CHAPTER 1

INTRODUCTION

Purpose

The purpose of this study is to present baseline data concerning subsistence resource utilization in the Pribilof Island communities of St. Paul and St. George. It is implicit that this study is essentially the first phase of a multi-phased Aleutian/Pribilof research endeavor by the Subsistence Division, Alaska Department of Fish and Game, which in future years will be expanded both areally (to include additional work in other Aleut communities) and topically. Therefore, the results and-conclusions contained herein are in some instances tentative and dependent upon future research for refinement.

The communities studied in this project, St. Paul and St. George, are located on islands of the same names in the Bering Sea and are isolated from the nearest neighboring communities by several hundred kilometers of ocean (Figure l-l). The vast majority of the population of each community is Aleut, since their populations were derived from Aleuts of the Aleutian Islands brought to the Pribilofs in the late 1700s and early 1800s by Russian fur hunters.

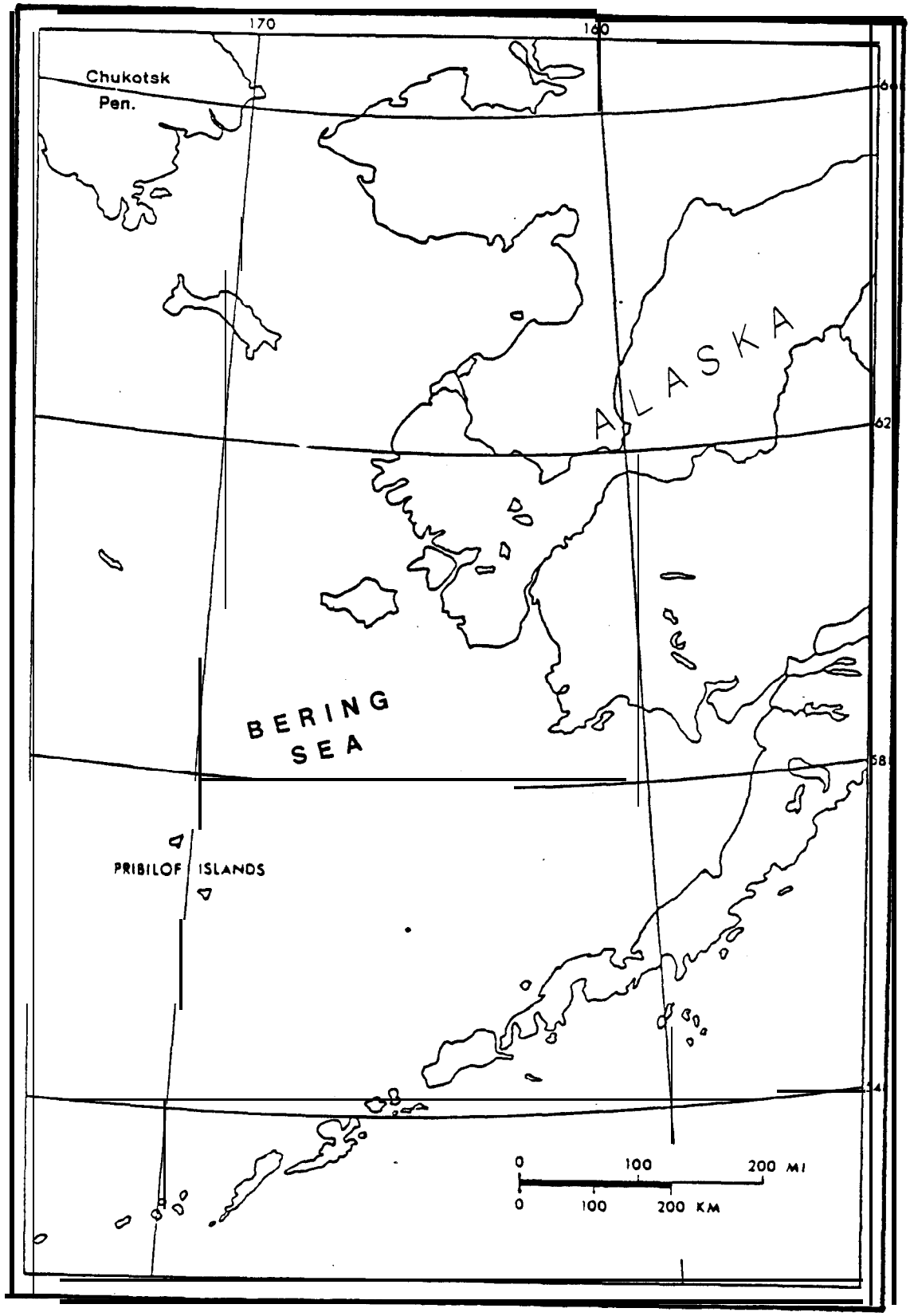

Figure 1-1:--Location of the Pribilof Islands

The rationale for subsistence research in the Pribilof Islands lies in part in impending social, political, and economic events of a state and national nature that have potential for impacting various facets of Aleut life, including subsistence resource utilization, subsistence patterns, and subsistence values. These events include, but are not restricted to, Outer Continental Shelf oil and gas development (in both the St. George Basin and the North Aleutian Shelf), the development of port/harbor facilities in St. Paul and St. George, the development of-new economic enterprises (such as bottom fisheries), efforts to halt or limit the harvest of fur seals, and decreased federal funds for the administration of the Pribilof Islands. However, while it is imperative that as thorough an understanding as is possible of subsistence and its relationship to the'larger sociocultural and socioeconomic systems of these communities be gained in order to understand and assess future impacts, the present study is not an impact study per se, and no substantial attempts will be made to pursue such issues.

Although no firm definition of "subsistence" exists today, and the word connotes various meanings to different people, this study employs a concept of subsistence which views it as one important aspect of a complex and dynamic cultural system, having important relationships in all spheres of life—the technoenvironmental, the social, and the ideological. At its base, subsistence pertains to the direct

relationship between people and the natural environment insofar as resources are utilized by those people to sustain life. In addition, subsistence is interrelated both with social facets of culture, such as the formation of task-groups and the sharing of subsistence information and resources, as well as with ideological facts, such a perceived value of subsistence and possible beliefs in animal spirits and the placation of them.

Research objectives

The perspective outlined above governed the formation of a broad range of objectives for investigating subsistence resource utilization in the Pribilof Islands. They are as follows:

(1) To determine the relationship between subsistence patterning and settlement patterning; specifically, to see how the communities were in the past and are today geographically situated with respect to subsistence resources. Also of interest in this context is the use of special-purpose secondary settlements (such as "camps") employed for subsistence purposes.

(2) To establish which species of plants and animals (with special emphasis on marine mammals and fish) are utilized for subsistence purposes. Further, the area(s)- from which each item is obtained, the technology, methodology, and

time of year of their procurement, the use(s) to which each resource is put, and the distribution of each item within the communities were tc be determined.

(3) To establish which community members (by analytic category, not by name) engage in subsistence pursuits and to investigate the social and cultural links which exist for the acquisition, distribution, and consumption of subsistence resources.

(4) To establish in a general manner the relationship between the subsistence and cash economies. The proportion of subsistence foods in each community's diet, the monetary cost of providing and maintaining'the necessary subsistence technology, and the influence cash employment has upon subsistence endeavors are among factors to be considered.

(5) To investigate the ideological aspects of subsistence among community members.

(6) To provide perspective on the manner in which various historical factors may have influenced contemporary subsistence resource utilization.

Research methods

To address these objectives, research employing a variety of methods was conducted. Except for field research and final report preparation, the authors were contracted on a part-time basis for this project. The research methods utilized may be itemized as follows:

(1) An examination of the literature pertaining to Aleut subsistence was made, with special reference to the Pribilof Islands. Attention was given not only to recent and contemporary subsistence resource utilization, but to data pertaining to the precontact and early historical periods as well. Precontact Aleut subsistence patterns are reviewed in Chapter 2, and Pribilof Aleut subsistence history is contained for the most part in Chapter 5. Literature research on these subjects took place throughout the course of the project.

(2) Several periods of field research were conducted in St. George' and St. Paul. The authors, accompanied by Linda Ellanna and Alice Stickney, made a preliminary visit to St. George from 15-20 August 1980, and to St. Paul from 20-21 August 1980. During that time, initial contacts with community members took place, and the purpose of the project was explained. From 10-17 January 1981, the authors conducted field research in St. Paul. Various methods were utilized to gather data, including observation and participant

observation of hunting and both structured and informal interviewing of community members especially knowledgeable about subsistence. Formal interviews consisted of questioning with a predesigned, though expandable, list of topics. In all community contacts, every effort was made to inform people of the purpose of the project. While in St. Paul,. Douglas Veltre was interviewed about the project for local television broadcast.

Field research by the authors continued from 9-17 June 1981, and l-9 July 1981 in St. Paul and from 17 June-1 July 1981 in St. George. During these times data were gathered as described above, with the additional use of island maps as part of the formal interviewing procedure.

In addition to the field research listed above, Linda Ellanna spent the period from 9-14 March 1981 in St. George collecting subsistence data. Alice Stickney visited St. George during several days in March 1981 and May 1981, providing the authors with additional information.

(3) To aid in gathering information concerning subsistence activities throughout the year, 2-4 local assistants were hired in each community. While their primary tasks were to record data on the frequency and success of hunting, fishing, etc., additional facets of their work included mapping of subsistence resources, establishing community demographic

data, and so on. Contact was-maintained throughout the project with these assistants, and they were paid by the hour for their work.

Discussion of research methodology

In addition to the points mentioned above, several comments are required concerning the research methods. First, all persons who participated in the structured interviews (usually including mapping of resource areas) were paid an hourly rate for their time. Second, the anonymity of each individual from whom information was obtained will be maintained throughout this report. This decision was made by the authors prior to the start of the project and was made clear to potential informants. In retrospect, it is accurate to state that such assurance to people in St. Paul and St. George assisted substantially in the acquition of desired information.

Third, while the Pribilof Islands have been the subject of a vast number of published works (chiefly government-sponsored), the overwhelming bulk of that material has been generated not from interest in the Aleuts but rather out of concern for the fur seal industry. Consequently, historical documentation regarding Pribilof Aleut culture, including the realm of subsistence, is often sketchy, infrequent, written by persons other than social scientists, and ethnocentric. This places a substantial limitation on the

ability to reconstruct any but the most general features of prior subsistence patterning. More detailed comments concerning the literature will be made in Chapters 2 and 5.

Fourth, the most productive research method for investigating contemporary subsistence was participant observation and interviewing by the authors. The village assistants collected valuable information, but there were some difficulties encountered with this method of data-gathering. These difficulties were mostly of two kinds. One was that of time: although the assistants were very willing to help with the project, each had other interests and responsibilities which precluded substantial research involvement. Since all subsistence activities, therefore, could not be recorded, the information supplied by the village assistants was generally of a qualitative, rather than a quantative, nature. The data which the assistants were able to provide primarily helped to establish the range of subsistence activities and the locations at which these activities took place.

The second kind of difficulty encountered by the village assistants (and by the authors-as well) was the reluctance by many community members to share information concerning their subsistence activities for a research project for the Department of Fish and Game. Although the authors were most often successful in assuaging such feelings

in their research activities, this was something more difficult for the village assistants to accomplish, since they had less "feel" for the project rationale and found it difficult to pursue such research in their own community.

A final comment concerning the village assistants is that over the course of the research there was a partial turnover of workers, making consistent long-term recording of data difficult.

A fifth comment concerning research methodology, and one which follows directly from those already enumerated, is that the major limiting factor of this project was the amount of field time which budget and time factors permitted. Thus, since the authors could not spend an entire year in the Pribilofs, subsistence activities during certain times of the year are better documented and more fully understood than others, although the work of the village assistants and the spread of field research at different times of the year mitigated somewhat in this regard.

Sixth, knowledgeable informants in St. Paul and St. George were selected on the basis of recommendations from other community members and not by statistically random means. Although information was collected concerning the frequency of various subsistence activities, the relative importance of subsistence items to the communities, and other

topics, no attempt was made to survey each household's use of subsistence resources in this baseline study. Approximately 30 key informants in each community provided the majority of the data gathered during field research.

Seventh, prior to writing the final version of this report, the authors sent draft copies to St. Paul and St. George for community review. All those individuals who were interviewed during fieldwork, as well as the village assistants and the village corporation and council leaders, were sent personal letters inviting them to read and comment on the review copies. These persons were also encouraged to invite other community members to review the draft report.

Eighth, and finally, because some subsistence pursuits were felt by the communities-for various-reasons-to be of a sensitive nature, they have not been included in this final report.

Organization of the report

In the report that follows, Chapter 2 provides a background on Aleut subsistence prior to and immediately following the Russian discovery of Alaska. Chapter 3 presents an historical outline of the Pribilof Islands, including a history of settlements on the islands and profiles of the communities of St. Paul and St. George. Chapter 4 describes the natural environment of the Pribilof Islands.

In Chapter 5 a detailed examination of subsistence items, their history of use, and their contemporary use in the Pribilofs is presented. Chapter 6 includes a number of issues regarding Pribilof subsistence, and offers final comments concerning this project and suggestions for future research.

CHAPTER 2

BACKGROUND ON ALEUT SUBSISTENCE

Introduction

At the time of the discovery of the Pribilof Islands, traditional Aleut culture was undergoing profound changes brought about largely through the exploitation of Aleut people and local resources by Russian fur hunters (see Chapter 3). Since it was Aleut people who were eventually to settle in the previously uninhabited Pribilof Islands, this section briefly reviews the precontact subsistence life style of Aleuts and then examines the kinds of changes that were taking place at the time the Pribilofs were settled. Such a review provides a general baseline against which to assess both the local subsistence adaptations which Aleuts made once they became residents of St. George and St. Paul as well as the changes in subsistence which occurred from the late 1700s to the present time.

Prior to Russian contact, Aleuts occupied a territory consisting of the entire Aleutian archipelago, from Attu Island in the west to Unimak Island in the east, as well as the Shumagin Islands and the tip of the Alaska Peninsula. from Port Moller westward. Although the more distant past

is less certain, it is apparent from archaeological data that at least from 4000 years ago, and likely from 8500 years ago, to the present, Aleuts have been the sole occupants of this area and that they have, over this period, maintained a fundamental cultural adaptation that was focused on the sea as the direct or indirect provider of virtually all basic necessities of life.

To the east on the Alaska Peninsula and continuing onto the mainland of Alaska, the neighbors of the Aleuts were various Eskimo groups. To the north of the Aleutians, the Pribilof Islands were most likely not inhabited by anyone in the precontact period, although Aleut legend maintains that the islands were, in fact, known to exist prior to their Russian "rediscovery" in the late 1700s (Veniaminov 1840, quoted in Elliott 1881:146).

It may be pointed out that most Aleutian scholars (e.g., Laughlin and Aigner 1975) agree that the Aleutians have exhibited remarkable cultural stability over a relatively long time, much of this attributable to a stable and uniform environment as well as to Aleuts' residence in a geographic cul de sac, which effectively limited interactions with other people.

Precontact subsistence patterns

Knowledge of precontact and early postcontact subsistence in the Aleutians comes primarily from two sources: artifactual, faunal, and settlement data obtained from the usually very rich archaeological sites throughout the archipelago, and the historic and ethnographic accounts of early hunters, travellers, and missionaries. Each of these two sources had obvious limitations in providing accurate insight into Aleut subsistence. Archaeological data, though easily quantified, are limited to preservation, the difficulty in identifying food versus fabricational use of fauna1 remains, the vagaries of which sites have been dug and in what manner, and so on. Historic and ethnographic data likewise are biased, primarily because the early writers were not trained observers, and also because such information has rarely been recorded in a quantified manner. In sum, we may reliably itemize what was being utilized, but not necessarily when, by whom, where, how, or in what quantity.

Thus, the following outline will concern itself with general patterning: those characteristics of Aleut subsistence which were pan-Aleutian. Only rough estimates of the relative importance of particular food items will be possible. Consideration will first be given to an inventory of food resources and the technology related to their acquisition. Next, the social and economic aspects of subsistence will be discussed. [1]

Table 2-1 presents an inventory of the major subsistence resources and the means by which they were obtained. Included in this table are items important exclusively for fabricational use (such as stone for knives, etc.), although it must be realized that many of the food items listed were additionally utilized for non-food purposes. Table 2-2 provides perspective on this point, detailing the range of uses of a single "food" item, the sea lion. It is well established from both ethnographic and archaeological sources that other animal resources (such as puffins, sea otters, hair seals, cormorants, etc.) were likewise used for food and fabricational purposes.

Although precontact Aleut sites lend themselves well to quantification of archaeological faunal remains and determination of corresponding food values, relatively little research has been directed towards these ends. Therefore, it is possible only to suggest the general relative importance of the various food items listed in Table 2-1. Denniston has presented data from the site of Ashishik Point, on the north end of Umnak Island. Her figures for the relative food values represented by remains at that site of marine invertebrates, birds, fish, and sea mammals are 1:1.75:35.88:51.74, respectively (1972:208). The precision of these figures should not be mistakenly interpreted as an accurate reflection of subsistence throughout the Aleutians, however. As various authors have pointed out (e.g.,

TABLE 2-1:--Major precontact subsistence resources and subsistence techniques of tne Aleutian Islands

Subsistence Resource	Hunting/Gathering Techniques and Implements
1. Sea mammal hunting offshore (includes whales, hair seals, sea lions, sea otters, fur seals)	Sight and surround animals with bidarkas or baidars; use of harpoon, spear, and/or club except for large whales which wash ashore when dead; possible use of aconite poison for whales.
2. Sea mammal hunting onshore (includes hair seals, sea lions, and sea otters)	Surprise animals on mainland shore or on islets; approach by foot or boat: kill by spear, harpoon, and/or club: possible use of nets.
3. Bird hunting on water (includes all species of ducks)	Stalk birds on water surface; capture with bird spear or arrow; net birds on lakes from blind.
4. Bird hunting at nesting sites (includes all species of nesting birds)	Bird cliffs approached by boat from below or by rope from above: birds caught with snares, bolas, handnets, leisters, clubs, or by hand at nests as well as away from nesting areas.
5. Fishing offshore (primarily halibut and cod)	From boats with hook and line or leister.
6. Fishing onshore (primarily salmon and Dolly Varden trout, but also other fish, including halibut and cod)	Hook and line from shore: use of nets, leisters, weirs, and hands at stream mouths and in streams.
7. Intertidal and beach collecting (various marine invertebrates, including sea urchins, clams, periwinkles, etc., and algae: also washed up fish, sea mammals, birds and driftwood)	Combing the beach and intertidal zone for these items: use of prying tool to loosen items from rocks and use of grass collection baskets or gut or skin containers.

TABLE 2-1:--(Continued)

Subsistence Resource	Hunting/Gathering Techniques and Implements
a. Onshore collecting (terrestrial plants, raw materials such as stone for fabricational use)	Techniques and implements: travel to areas of resource availability: use of wedges, digging tools, etc., to extract materials; grass, gut, or skin containers to carry collected items.

SOURCE: Adapted from McCartney(1977:81-82). See that source for detailed citations concerning specific subsistence items, techniques, and implements.

TABLE 2-2.*--Utilization of the Steller, or Northern, Sea Lion

Part of Animal	Partial List of Uses
1. Hide	Cover for bidarka and baidar; line for harpoon
2. Flesh	Food
3. Blubber	Food (eaten with meat: also rendered for oil)
4. Organs	Food
5. Bones	Ribs for root diggers; humerus for club: baculum for flaker
6. Teeth	Decorative pendants; fishhooks
7. Whiskers	Decoration on wood hunting hats and visors
a. Sinew	Cord and thread for lashing and sewing
9. Flippers	Soles used for boot soles; contents gelatinized in flipper and eaten
10. Pericardium	Water bottle: general-purpose container
11. Esophagus	Parka, pants, leggings of boots, pouches
12. Stomach	Storage container
13. Intestines	Parka, pants, pouches

SOURCE: Laughlin (1968:40)

Denniston [1972], Yesner [1977], McCartney [1977]), substantial variations exist with respect to seasonal and local abundance of virtually all subsistence resources, and no single site may be taken as "typical" of Aleut subsistence patterning. Nevertheless, Denniston's ratios very likely portray the correct order of magnitude of food importance of those major categories, and, as McCartney points out (1977: 82), the ratios constitute "a more precise estimate of the Aleut diet than that suggested by the ethnographic literature." (See also McCartney [1975:293-295] in this regard.)

The ethnographic literature, however, supplies valuable evidence lacking in archaeological sites, such as the importance of eggs. Laughlin's (1980:49) proportions of basic food items, most likely based on ethnographic as well as archaeological data, are less precise, but perhaps more accurate, than those provided by archaeological data alone. His estimates (which he states may have varied by as much as 10% over time and space) are as follows: marine mammals 30% of the diet; fish 30%; birds and eggs 20%; invertebrates 15%; plants 5%.

Although many subsistence items could be obtained through individual effort, cooperation was an important theme in much of Aleut food procurement. Especially for such activities as sea mammal hunting, egg collecting, and fishing

(with nets and weirs), Aleuts were required to work together. It is not at all surprising, then, that food was shared among Aleuts, certainly within extended family households and perhaps within an entire community. Veniaminov states: "From time immemorial it has been the custom of the Aleuts, when there is a shortage of food, to divide among themselves all that is obtained. For example, he who has caught some fish divides them among all who are in need and not only does he not take a larger share than the rest, but not infrequently he gets less than the others" (1840:56). Similar examples regarding sharing exist, and it may be assumed that in most instances of food exchange a system of general reciprocity was followed.

Aleut religion and ceremonialism, although less well known than that of many other Alaska Natives, certainly included features pertaining to subsistence common to many northern cultures: the belief in human and animal spirits, the necessity to placate animal spirits in order to assure continued hunting success, and ability of shamans and human mummies to influence and assist in hunting endeavors. Sarychev, for example, reports that the person who obtained the first sea lion of the season shared it with all the members of his village. Afterwards, all of the bones were returned to him, and he threw them back into the sea (l&306-07:57-58). Whaling, too was surrounded in behavior governed by spirits: a man, after wounding a whale, would

go into seclusion and behave as though he were sick, thus hastening the whale's demise (Veniaminov 1840:133-134). Numerous additional examples exist which exemplify the important ideological component of subsistence pursuits in precontact Aleut culture (see Lantis 1947; Ransom 1946).

The early postcontact period

The early Russian period -from 1741 to the 1786 discovery of the Pribilof Islands -was clearly a period of profound culture change for Aleuts. Population declined, settlements were relocated, and Aleuts were forced to labor either directly for the fur trading companies or indirectly for them to produce the required tribute. Although the specific changes in subsistence activities that occurred can only be suggested at this stage in our knowledge of archaeology and ethnohistory, the following general points can be made. First, the utilization by the Russians of Aleut males to hunt sea otters could very well have limited the amount of sea mammal hunting done for subsistence purposes. Second, if Aleut males were removed from their villages for non-subsistence hunting or other activities, dietary proportions of various food items would likely have changed. Third, although the Russians gradually introduced foreign foodstuffs (sugar, tea, flour, etc.), these items did not assume a significant portion of the Aleut diet since they were expensive and limited in quantity. Thus, Aleuts continued to be highly dependent on traditional subsistence resources obtained,

especially in this early Russian period, with traditional technology.

The Aleuts who were moved to the Pribilofs by the Russians (see Chapter 3) were limited in the degree to which they could engage in their traditional subsistence pursuits by one additional factor. The environment and natural resources of the Pribilofs, though generally similar, are different than those of the Aleutian archipelago (see Chapter 4), and different subsistence priorities-namely, dependence on the meat and raw materials of the fur seal—necessarily developed.

Conclusions

From the foregoing outline of precontact Aleut subsistence, the following conclusions may be offered:

(1) An inventory of food items utilized by Aleuts closely mirrors an inventory of edible foodstuffs in the Aleutian archipelago. Stated differently, it appears that Aleuts made use of almost-all available edible food sources (albeit, of course, to varying degrees).

(2) Aleut subsistence was by necessity directed almost exclusively to the sea as the direct or indirect source of food and of fabricational materials. Land resources provided very little in terms of total dietary intake.

(3) Although local differences do exist in the presence and abundance of some species, the archaeological record supports the notion of basic subsistence uniformity over both space and time for precontact Aleuts. Uniformity is evident in the specific food items, the hunting and gathering technology, and the social and economic aspects of food acquisition and use.

(4) The wide variety of edible foodstuffs, especially the marine invertebrates, enabled most members of an Aleut community to participate to an important degree in the acquisition of food. In other words, food getting was not limited to a single category of people, although the bulk of the food was undoubtedly provided by the able-bodied younger males, who did all of the sea mammal hunting and participated as well in other activities.

(5) The early Russian period was characterized more by shifts in traditional subsistence pursuits (through movement of people, reduction of population, etc.) than by the introduction of new subsistence endeavors or reliance on imported foodstuffs. When Aleuts were taken to the Pribilof Islands, major shifts in subsistence patterning took place, on the one hand, in the incorporation of fur seal as the chief subsistence resource, and on the other hand, in the absence of any anadromous fish on the islands.

(6) Cooperation in hunting and fishing, and sharing of food within a community, was a precontact cultural pattern which continued into the historic period. Subsistence for Aleuts must be viewed as an economic system of adaptation which involved technological, social, and ideological components, and which continued from the precontact period into the Russian period.

NOTE

1. Discussion will be limited to traditional Aleut subsistence as revealed by precontact and early postcontact sources as well as by archaeology. Only a few studies of Aleut subsistence in more recent times exist (e.g., Ransom 1946), but these are brief and do not pertain directly to the Pribilofs: hence, they will not be dealt with in the present study.

CHAPTER 3

HISTORICAL BACKGROUND

Introduction

This section presents a brief historical outline of the Pribilof Islands during the Russian and American periods that will be useful in subsequent discussions of the history of subsistence resource utilization on those islands.[1]

Russian period

Russian contact in Alaska began with the 1741 voyages of Vitus Bering and Alexei Chirikof, made on behalf of the Russian government. Although only brief landings and encounters with natives occurred during these voyages, the return of the crews to Kamchatka in 1741 and 1742 with the skins of sea otters and foxes from the Commander Islands insured the future of Russian contact in the Aleutians and farther eastward. As early as 1743, Emelian Basov journeyed to Bering Island, hunting there until the following year. He sailed again in 1745, returning from Bering Island in 1746 with a cargo of 1,600 sea otters, 2,600 fur seals, and an equal number of blue fox pelts (Berkh 1974:2). Basov journeyed again and again to the Aleutians, his ventures anticipating those of dozens of other promvshlenniki, or fur

hunters. By the early 1770s, no fewer than 31 fur hunting expeditions had successfully been made in the Aleutians, the promyshlenniki pushing ever farther eastward in their pursuit of the sometimes elusive, and ever fewer, sea otters.

The Commander Islands (Bering and Copper) became a frequent wintering stopover for these voyages, and by 1768 the crews exterminated the last of the sea cows which were found there and which had been easily hunted for food. The Near Islands (Attu, Agattu, and Shemya) were discovered by 1745, the promyshlenniki pushing to the Andreanofs of the central Aleutian archipelago by 1750, to Umnak and Unalaska of the eastern Aleutians by 1759, to the Alaska Peninsula by 1761, and to Kodiak by 1763 (Figure 3-l). The voyages made during these early years of Russian contact-until 1799— were usually of several years' duration, not returning until a profitable number of skins had been amassed. The promyshlenniki were ruthless in their pursuit of fortune, and over the latter half of the 18th century their activities brought exploitation, disease, and death to many of the Aleut residents of the islands. Standard procedure for the hunters included the collection of yasak, or tribute, from the Aleuts, usually in the form of sea otter skins, and to insure "good" relations with the natives, the promyshlenniki took hostages from among the Aleuts.

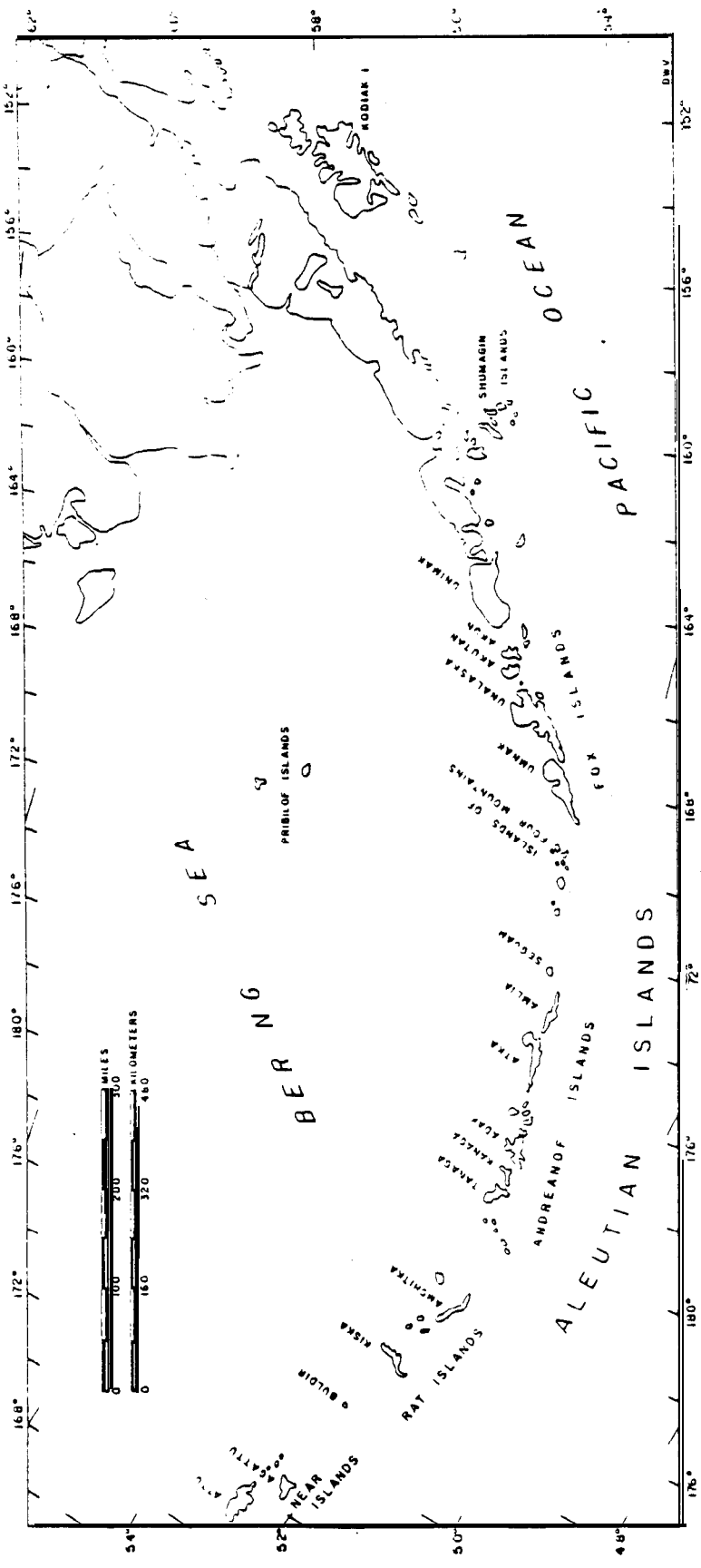

FIGURE 3-1:-The Aleutian Islands and vicinity.

From the first interaction between Russians and Aleuts on Agattu Island (Bancroft 1886:102-105), violence seemed to be the rule rather than the exception, and the precontact Aleut population dwindled to perhaps twenty percent of its size within the first 75 years of contact (Lantis 1970:277). Men like Soloviev and Glotov were personally responsible for the murders of thousands of eastern Aleuts in the 1760s (Davydov 1977:188; Veniaminov 1840:194), and many other Aleuts died at the hands of promyshlenniki throughout the islands.

Aleuts were subjected to extraordinary hardships by the fur hunters. Aleut men were taken from their homes and forced to accompany the Russians eastward, often in the face of hostilities from neighboring native groups. Such was the case in southeastern Alaska, for example, when in 1973 9 Aleuts were killed and 15 wounded while accompanying Baranov and again in 1802 when 130 Aleuts perished defending the new settlement at New Archangel (present day Sitka) (Tikhmenev 1978:33, 65): Similar examples abound.

Lacking firearms, the Aleuts never posed a serious threat to the advancing promyshlenniki, although there were relatively few Russians in Alaska at any given time, and what population there was was always scattered among various small settlements. In 1778, for example, there were approximately 462 Russians between Unalaska and Prince William Sound,

and these were divided among 8 settlements (Fedorova 1973: 116-117). In the following decade, from 1778-1788, the Russian population never exceeded 500, dropping to about 400 by 1794 (Fedorova 1973:124) and to no more than 225 by 1799 (Gibson 1976:7).

The 1780s and 1790s saw the formation and elaboration of a number of trading companies, among them ones owned by Grigorii Shelikov and Ivan Golikov as well as by Mylnikov. It was the merger of companies owned by these three men into the United American Company in 1797 that led directly to the 1799 formation of the Russian-American Company. The latter company was given legal monopolistic rights to all hunting activities north of latitude 55° and was authorized the support of the Russian military forces, including its navy.

It was in the 1780s, in the context of growing competition among a large number of trading companies for ever scarcer fur resources, that the discovery of the Pribilofs by Russians took place. It had been long known by the Russians, and longer by the Aleuts,' that fur seals swam southward through the island passes in the fall and northward in the spring, without coming ashore. While some navigators searched for the fur seals to the south of the Aleutians, Gerassium Pribylov, the chief navigator of the large Lebedov-Lastochkin Company, ended three years of search in the Bering Sea on 25 June 1786 when he discovered St. George Island.

Pribylov left a party of men on the island for the winter, during which time they spotted St. Paul Island, some 40 miles to the northwest. That island was reached the next year by Pribylov and his crew.

Soon after the discovery of the Pribilofs, labor for the sealing activities there was provided by Aleuts who were imported during the summer months from their native villages. These Aleuts, coming primarily from Atka and Unalaska, were settled into permanent villages on St. Paul and St. George in the 1820s, by which time the Russian-American Company had found such an arrangement more efficient than the earlier seasonal system of labor recruitment had been.

While payment of tribute by natives was eliminated in 1795 (Fedorova 1975:16), the Russian-American Company's success was based on the availability of Aleut and other indigenous labor. Not only was it difficult to maintain a Russian population large enough to undertake hunting pursuits, but, as one Russian naval officer observed in 1820,

> "If the company should somehow lose the Aleuts, then it will completely forfeit the hunting of sea animals, because not one Russian knows how to hunt the animals, and none of our settlers has learned how in all the time that the company has had its possessions here" (quoted in Gibson 1976:8).

Thus, Aleuts were a valuable labor pool for the Company, and they were forced to work for it:

> As a result of a need for competent hunters and the availability of Aleuts for service, the company compelled Aleut men to catch primarily sea otter, fur seal and sea lion. In effect, it turned Aleut men into serfs, for compulsory hunting for the company was similar to forced labor . . . by Russian serfs on a lord's land. . . . Thus, the Company followed the very practice which promyshlenniki had begun and the government knew that the company was forcing Aleut men to hunt sea mammals, but permitted this practice apparently because the company was unable to obtain the sea otter fur wealth of the North Pacific Ocean in any other way (Sarafian 1970:155).

Over the years, the activities of the Russian-American Company changed. Plagued by various misfortunes during its early years (Gibson 1976:13-15), by the 1830s the Company had settled down to more conservative administration. Increasing foreign competition (British and American) encouraged northward exploration and expansion by the Company; humanitarian needs were attended to, with doctors, priests, and teachers brought into service in the colonies: fur production was down sharply from earlier years, so that prices rose and alternate sources of income were sought.

By 1830, the multiple settlements on both St. Paul and St. George had been consolidated into a single village on each island, each having a church, store, various other company buildings, and the semisubterranean Aleut houses (see further discussion later in this chapter). By the late 1830s, the Northern District of the Company (which included the

Pribilofs) had the lowest capital assets of any of the administrative units of the Russian-American Company (Gibson 1976:22).

Although sea otter pelts were many times more valuable than those of fur seal, from 1797 through 1861, 70% of all the furs exported from Russian America were fur seal skins and only 14% were sea otter pelts (Gibson 1976:35). From 1786 through 1832, a total of 3,178,562 fur seals were killed on the Pribilofs, but the yearly rate declined: the average annual kill went from 94,000 in 1786-1803 to about 39,000 in 1815-1832. During the 1830s the average take was only 10,000 to 11,000 (Gibson 1976:35).

The Russian-American Company provided its Aleut hunters throughout Russian America with clothing, food, and bidarkas (skin-covered boats), and it was on the Pribilofs that a large amount of the gut rain gear and skin boat covers were manufactured. Sea lions'were hunted for this purpose, although harbor seals were also utilized, and during the first half of the 1830s the yearly population of sea lion was some 1500 hides and almost 28,000 yards of intestine (Gibson 1976:36).

The later years of the Russian-American Company were times of diminishing financial success. Not only was the supply of furs down, but so were world demand and prices, and

the Company diversified its activities in order to spread its risks (Gibson 1976:25). Attempts were made at such enterprises as whaling and coal mining, and these yielded certain financial rewards. The Company, however, slowly lost ground, and by the early 1860s its stability was on the wane. The Russian government had its own interest directed to Europe at the time, and the Company was in debt to the Treasury. In 1867, the unprofitable American operations of the Russian-American Company came to an end with the sale of Alaska to the United States.

American period

The American period in the Pribilof Islands began with uncontrolled plundering of the fur seal wealth by independent hunters. The United States moved to protect its interest in the fur seals in 1869 by making the islands a federal reservation, and in the following year

> . . Congress enacted legislation which gave the government authority to conserve the seals, protect the Aleuts' welfare, and-grant a private company an exclusive 20-year lease to operate the seal business. The lease required a substantial payment to the federal treasury in the form of rent and royalities. From the outset, Congress and other government officials perceived the Pribilof program as a rich source of federal revenues. This expectation became. embedded in the fabric of the Pribilof program and profoundly influenced the evolution of the Pribilof management policies and practices. Profits and the conservation of the seals upon which the profits depended came first; the Aleut people came last (Jones 1981:1).

The first 20-year lease established a pattern of total control over the lives of the Pribilof Aleuts that was to continue for nearly a century. The U.S. Treasury agents, who oversaw company activities, ruled almost every facet of Aleut life. The seal population declined substantially during the second lease period, and total federal control over the Pribilofs was assumed in 1910. Aleut living and working conditions continued to suffer:

> From the 1920s on, the colonial relationship that had been evolving in previous years had become entrenched. Managers accorded Aleuts virtually no rights. They:
>
> Paid them near-starvation wages.
> Destroyed remaining cultural institutions by prohibiting the Russian School. . .; suppressed the Aleut language; prevented Pribilovians from adopting relatives from other villages, thereby disrupting an age-old cultural custom.
> Continued to regulate Aleut's choice of marriage partners.
> Regulated Aleuts in their private family hours, for example, by separating couples who argued.
> Required official permission to leave or return to the villages.
> Continued to coerce obedience by imposing sanctions as reductions in sealing wages and deportation (Jones 1981:2).

Following World War II, when the Aleuts who had been evacuated from St. Paul and St. George returned to their villages, they-brought with them new ideas and new goals for removing themselves from under government control. Changes came, slowly, but by the 1960s Aleuts were able to travel and to have visitors, to police themselves, and, among other benefits, to partake in full economic equality. However,

declining revenues from the fur seal industry caused the government to reduce the size of the labor force, with the net result that in the 1970s few people were hired full time and most families' incomes were at or below the poverty level (Jones 1981:4).

History of Pribilof Island settlements

The first village on St. George, according to Elliott, was located "a quarter of a mile to the eastward of one of the principal rookeries . . ., now called 'Starry Ateel,' or 'Old Settlement'" (1881:19). At Zapadni Bay a second village was also founded, and "a succession of barrabaras [was] planted at Garden Cove' (1881:19) (Figure 3-2). Although the dates of these settlements are unclear, they are no earlier than 1787, the year following discovery. Elliott reports that the fur hunter Pribilof "and his associates, and his rivals after him, imported natives of Oonalashka and Atkha." (1881:19) to live at these places.

Probably in the year following the establishment of the village at Staraya (as it is called today), "more men were brought up from Atkha and taken over to St. Paul, where five or six rival traders posted themselves on the north shore, near and at 'Maroonitch,' and at the head of Big Lake, among the sand dunes there [at a place called 'Vesolia Mista,' or 'Jolly Spot']" (Elliott 1881:19). Still prior to 1796, other villages were founded at Polovina, Zapadni,

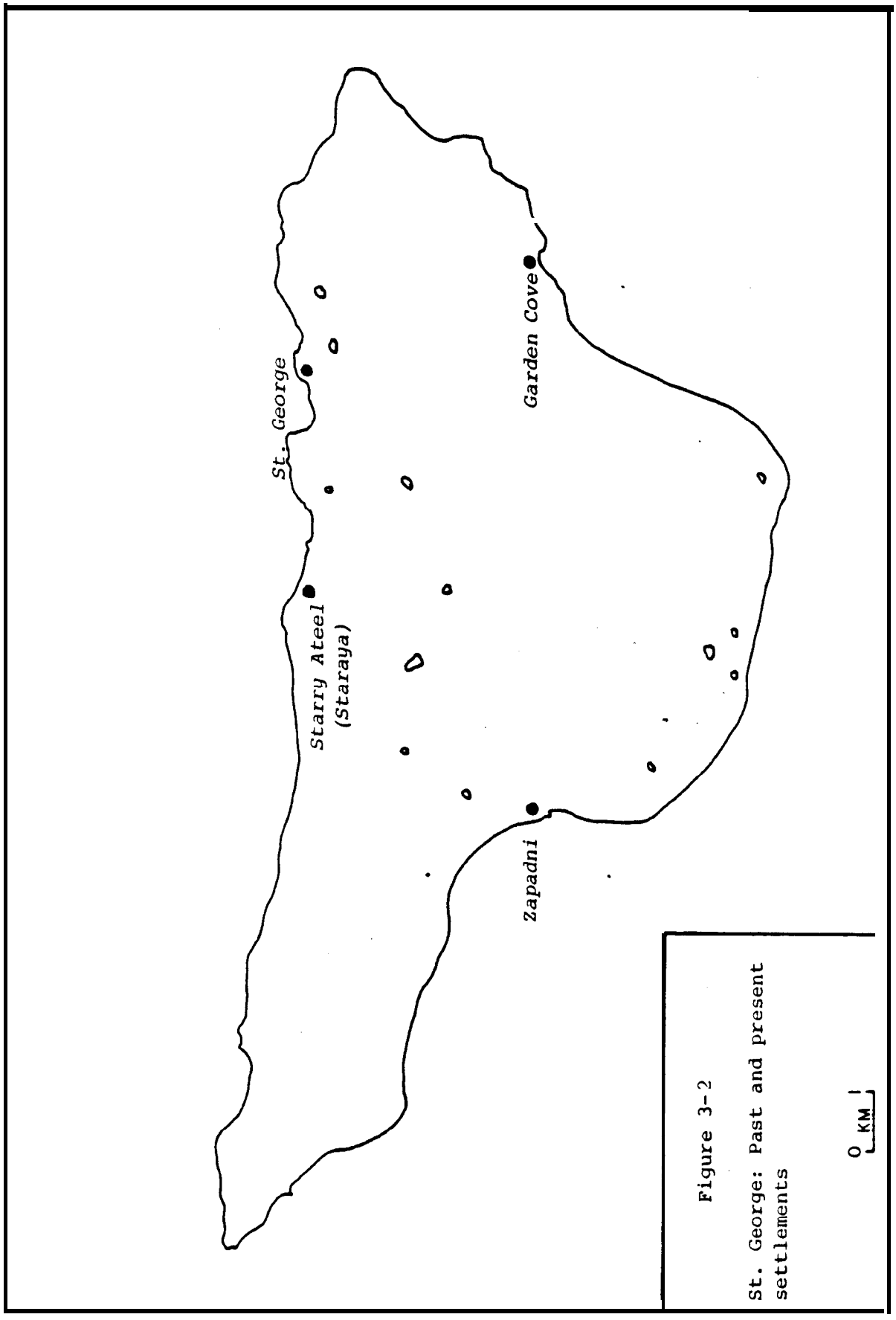

Figure 3-2

St. George: Past and present settlements

and Novastoshnah (Figure 3-3). Sometime following the 1799 formation of the Russian-American Company, the St. Paul settlements were consolidated at Polovina. In 1825, the Polovina Village was resettled at its present location to take advantage of the harbor there (Elliott 1881:20).

The St. George settlements were also consolidated "some years" after 1825 (Elliott 1881:20) at the present village location. Although Garden Cove has the best harbor, the new location minimized the great labor of transporting seal skins overland from the various killing grounds for shipment off the island.

The relationship of village settlements and secondary camps to subsistence will be discussed in Chapter 6. Table 3-l presents Pribilof Aleut population figures for selected years.

St. George community profile

St. George today is a community of approximately 168 persons, nearly all of whom are Aleut. There are about 39 houses in the village, most of them predating World War II, while the remainder include 7 brick homes built in the mid-1950s, 6 frame homes built in the late 1950s, and 5 additional houses built in 1978. Other buildings in St. George include the Russian Orthodox Church, a clinic, the Company (or Government) House (which is used as a hotel and

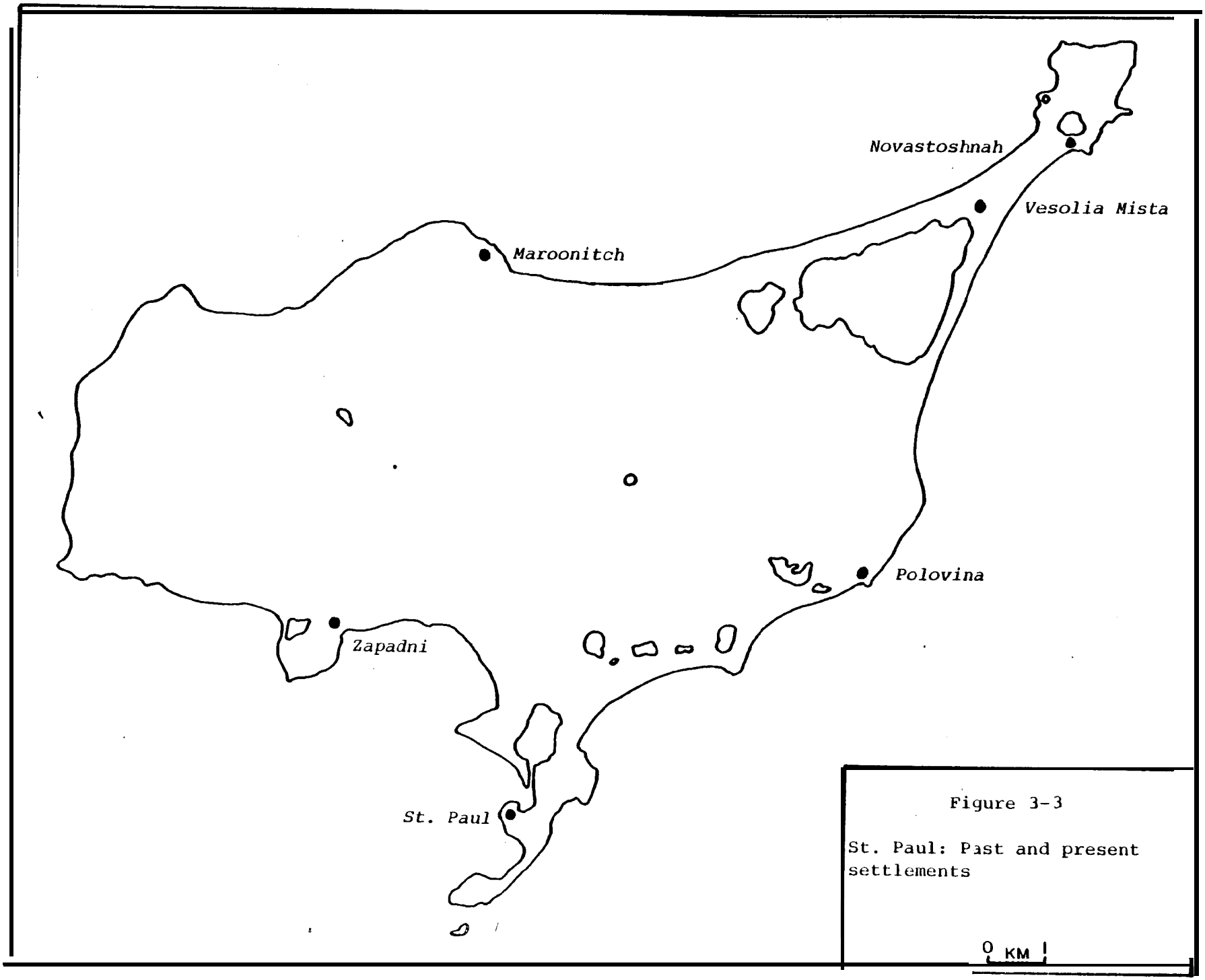

Figure 3-3

St. Paul: Past and present settlements

TABLE 3-l:--Population of St. Paul and St. George for selected years

Year	St. Paul	St. George	Total	Source
1825	108	81	189	(1)
1867*	283	139	422	(2)
1880	284	88	382	(3)
1914	192	116	308	(4)
1947	329	179	508	(5)
1950	350	195	545	(6)
195s	383	234	617	(7)
1960*	350	264	614	(2)
1970*	455	163	618	(2)

*For these years, Aleuts as well as non-Aleuts may be included in the figures given.

SOURCE: (1) Khlebnikov (1979:142)
(2) Jones (1976) cited in AEIDC (1978)
(3) Elliott (1881:20)
(4) Osgood et al (1915:139)
(5) U.S. Dept. of the Interior (1950:58-59)
(6) U.S. Dept. of the Interior (1953:55-56)
(7) U.S. Dept. of the Interior (1957:74)

restaurant), a community hall (which houses the community telephone, the Tanaq Corporation and village council offices, a recreation room, and the community canteen, which sells beer and miscellaneous household items), a school, and a number of buildings related to fur seal processing and management, one of which houses, in part, the food store. St. George homes possess complete indoor plumbing, although the difficulty of obtaining adequate potable water on the island results in many persons obtaining drinking water from the clinic, where there is a desalinization unit.

Census data, including information on household size and the age and sex of household members, were gathered in September 1980 and updated in March 1981. Table 3-2 and Figure 3-4 summarize these data. Included in the census are all permanent residents of St. George, including school children away for schooling and family friends or relatives from elsewhere who are currently living in St. George, but excluding those persons away for indefinite periods of time.

From Figure 3-4 and Table 3-2, a number of points may be made, First, the vast bulk (72.8%) of St. George's population is below 35 years of age-. A very sharp dropoff is obvious in Figure 3-4 between the 30-34 and 35-39 age groupings, and it may be noted that those over 35 years old were affected by the World War II evacuation of St. George. It is beyond the scope of this study to propose or

TABLE 3-2: --Household size in St. George

Household Size	Number of Households
1	5
2	7
3	7
4	6
5	6
6	3
7	1
8	1
9	0
10	0
11	1
12	1
13	0
14	0
15	0
16	0
17	0
18	1
Total	39
Mean size	4.3

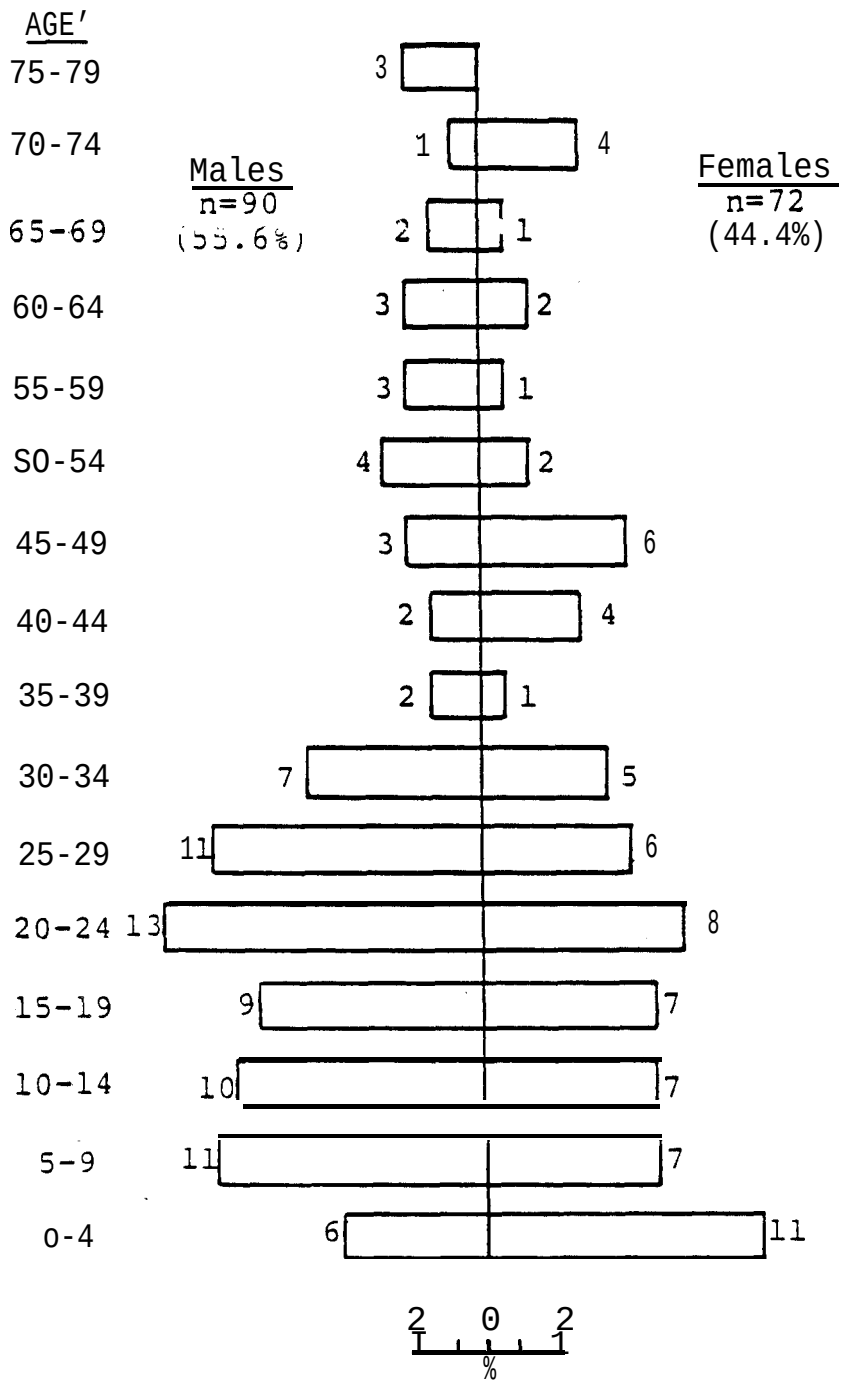

Figure 3-4 :--St. George Population (figures at ends of bars indicate number of individuals).

investigate causal relationships between evacuation and this demographic characteristic, but it is very possible that loss of persons (through various causes resulting from evacuation) in the older age groupings could have had ramifications in certain aspects of subsistence, including loss of knowledge of local wildlife habitats and hunting techniques, etc.

Second, although the average household size is 4.3 persons and the mode of household size is even lower (2 and 3), more individuals (30) live in S-person households than any other size.

St. Paul community profile

The Native population of St. Paul is approximately 519 persons, with an additional number (c. 50) of non-native residents. In 1979, there were about 94 households in the community, although since that time some 20 new housing units have been constructed: The remainder of the buildings in St. Paul include a Russian Orthodox church, an Assembly of God church, a‘clinic, a hotel, a community building (which houses the community telephone, the city office and other offices, and a recreation hall), a Tanadgusix Corporation office building, fur seal processing and management buildings, and a large community store.

The census data which are presented in Table 3-3 and Figure 3-5 are based on 1979 data compiled by the City of

TABLE 3-3: --Household size in St. Paul

Household Size	Number of Households
1	3
2	10
3	12
4	
5	12
6	8
7	9
8	15
9	4
10	3
11	1
12	3
Total	94
Mean size	5.5

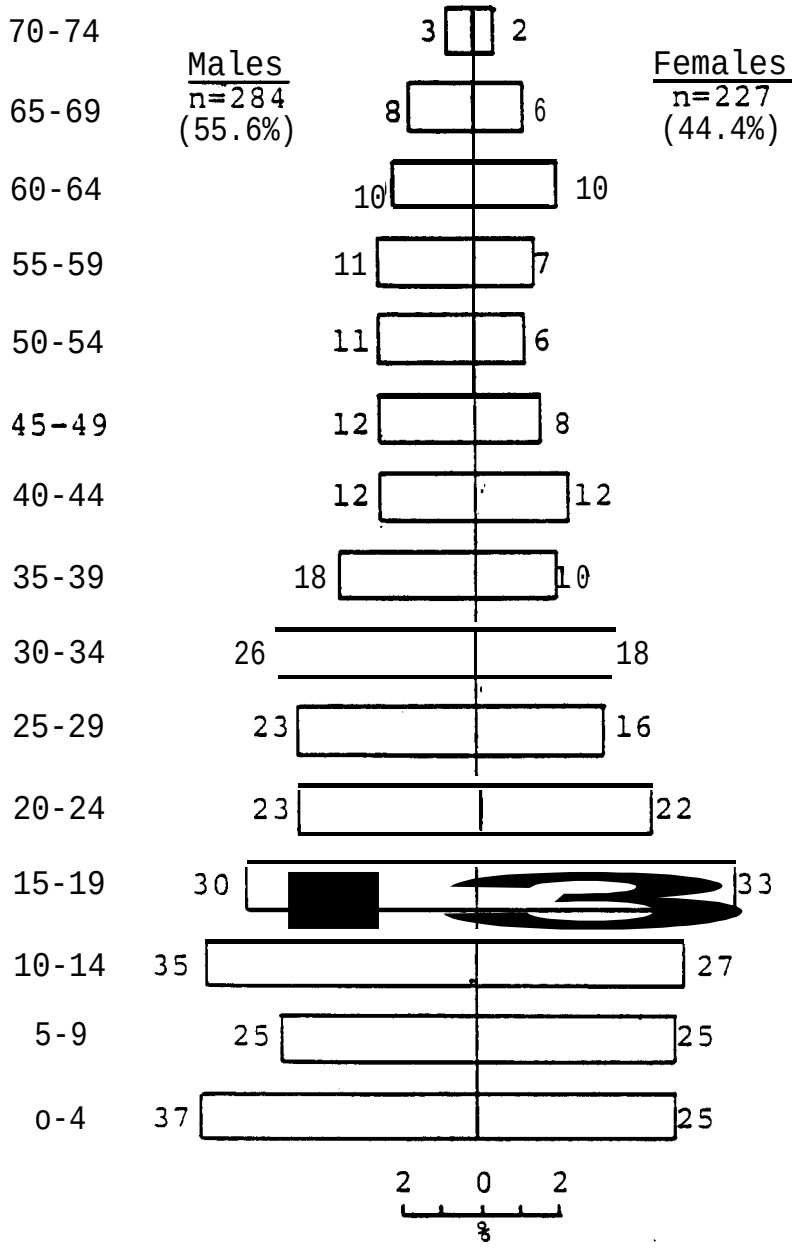

Figure 3-5:--St. Paul Population (figures at ends of bars indicate number of individuals).

St. Paul. They are the most recent available, but give a somewhat outdated picture, especially of household size, since a large number of new homes have been built size 1979, as mentioned above. The same categories of individuals included in the St. George census discussed earlier are included in the St. Paul figures.

As in St. George, the bulk of St. Paul's population (71.4%) is below 35 years of age (Figure 3-S). The higher average household size, 5.5, is due in part to the fact that over 23% of the population was, at that time, living in 8-person households (Table 3-3), underscoring the perceived need then for the recently built houses.

Conclusions

St. Paul and St. George stand today as unique Aleut communities. Not only were they settled outside the boundary of precontact Aleut occupation., but also their settlement and management has until very recently been focused almost entirely on the fur seal industry. As will become clear in subsequent chapters, that industry, in a large sense, has had significant ramifications on subsistence in the Pribilofs.

NOTE

1. The section on the Russian period is taken, with some revision, from Veltre (1979:64-67). That on the American period comes largely from Jones (1981).

CHAPTER 4

THE NATURAL SETTING

Introduction

This chapter presents general background information concerning the natural environment of the Pribilof Islands and surrounding waters. Geographical, climatological, and biological characteristics of St. Paul and St. George are followed by a comparison of the Aleutian Islands and the Pribilof Islands vis-a-vis the natural conditions and consequent subsistence possibilities each area possesses.

Location, geography, and geology

The Pribilof Islands consist of two major islands, St. Paul and St. George, and three islets, Otter Island, Walrus Island, and Sea Lion Rock. They are located between 169°30' and 170°30' W and 56°30' and 57°16' N in the Bering Sea (Figure 4-l). The islands are some 400 km directly north of the Islands of the Four Mountains, in the Aleutian archipelago, and 500 km west-southwest of Cape Newenham, on the Alaska mainland. The closest neighboring point of land is in the Aleutians on Unalaska Island, 340 km to the southwest.

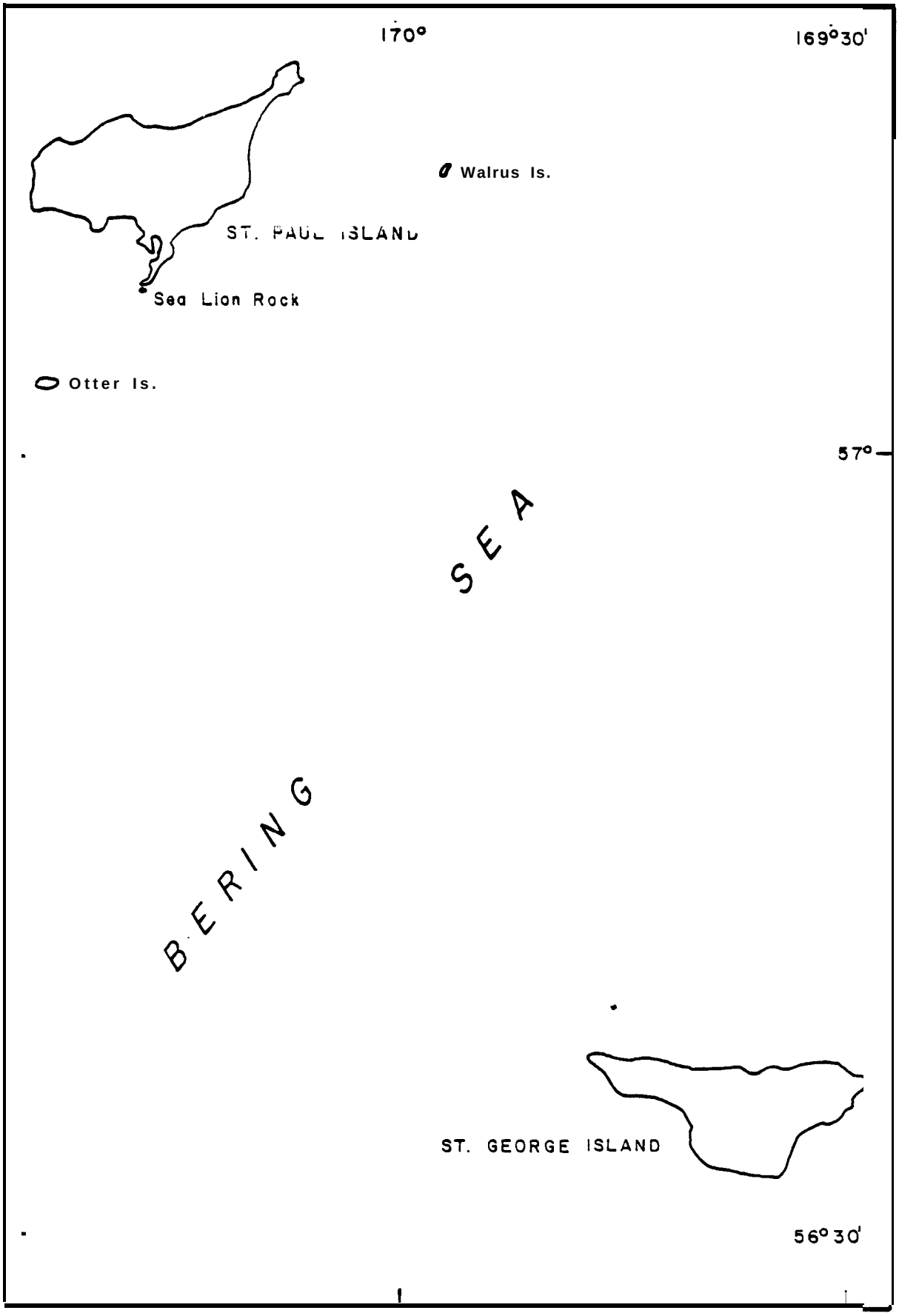

Figure 4-l :--The Pribilof Islands

St. Paul and St. George occupy 114 km^2 and 92 km^2, respectively, and Otter Island is 2 km^2. The two minor islands are each less than 0.05 km^2. The islands are volcanic in origin. The bulk of St. Paul (Figure 4-2) is dominated by many small cinder cones rising to a maximum height of 203 m (665') at Rush Hill, on the western end of the island. The island's interior is gently rolling and is generally less than 200' in elevation. On the northeast of the island is a low sand-covered extension which culminates at Northeast Point. Hutchinson Hill, near the point, is 99' above sea level. The island, whose cones and lava flows came into being during the last 400,000 years, has never been glaciated (Barth 1956: Hopkins and Einarsson 1966:343).

St. George (Figure 4-3) lacks the cinder cones of St. Paul and is instead characterized by a rolling highland. Its volcanic origin dates to between 2.5 and 1.0 million years ago, and evidence from Illinoian glaciation has been discovered in from 3 to 5 locations on the island (Hopkins and Einarsson 1966:343). Faulting and uplift have modified St. George to a great extent, with a ridge along the western portion of the north coast that culminates in High Bluffs (309 m) and a fault-block plateau including Ulakaia Hill (289 m) in the southeast portion of the island (Hopkins and Einarsson 1966:343).

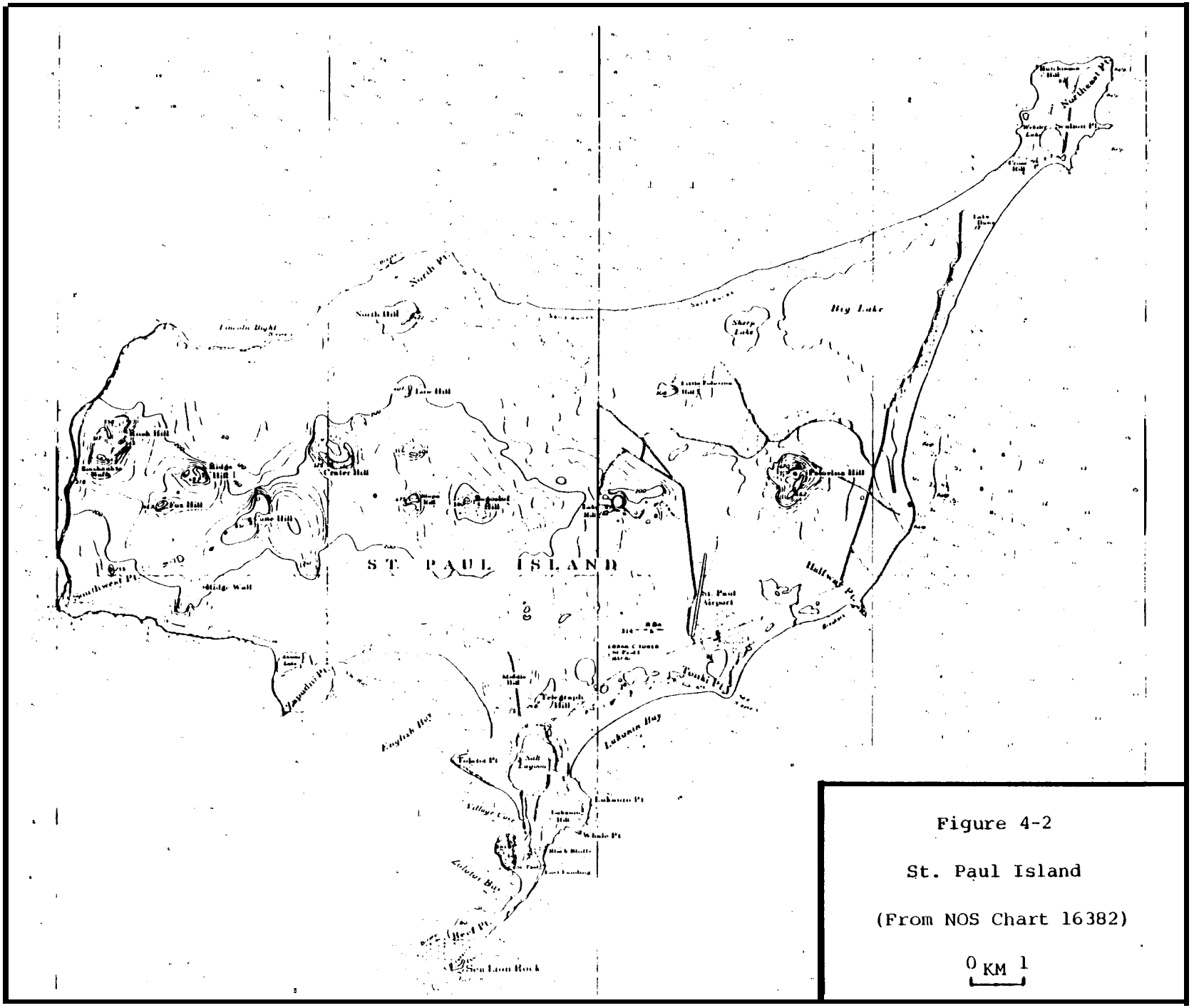

Figure 4-2

St. Paul Island

(From NOS Chart 16382)

0 KM 1

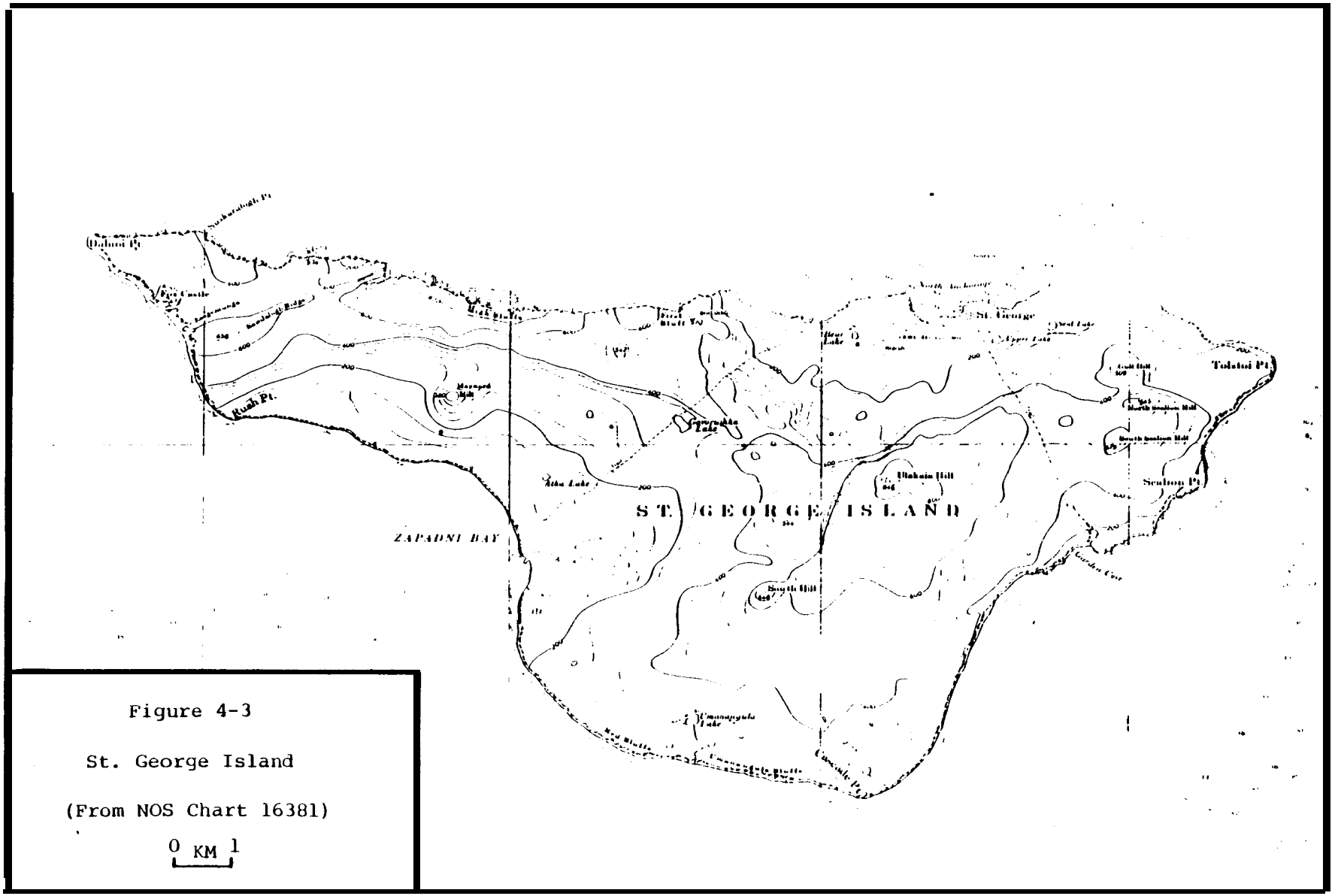

Figure 4-3

St. George Island

(From NOS Chart 16381)

0 KM 1

Both St. Paul and St. George are characterized by coastlines of precipitous cliffs caused by marine erosion. It is not known whether permafrost now underlies the, Pribilof Islands, although various cold weather phenomena (such as frost riving, solifluction, and creep) are evident today (Hopkins and Einarsson 1966:343). Seismic activity is minimal in the islands (SWRP 1976:78).

The Pribilcfs lie on, and near the edge of, the continental shelf, a broad plateau underlying the eastern and northern Bering Sea. Sea depths within 10 km of the islands are generally in the 20-40 fathom range, as the shelf slopes gently to the southwest. Approximately 50 km southwest of the islands lies the northwestward-southeastward trending margin of the continental shelf, at which point ocean depths of the Bering Sea rapidly increase, reaching over 10,000 feet in places.

Climate

Weather conditions in the Pribilofs are governed entirely by the Bering Sea and are characterized by the following: temperatures exhibiting comparatively little seasonal or diurnal variation; a high incidence of overcast and foggy days: and virtually omnipresent winds of moderate velocity.

Table 4-l presents temperature data for St. Paul and St. George. Differences between the two locations appear minor and likely reflect the short time spans over which meteorological data were collected, particularly at St. George. These temperature data compare favorably with those from various Aleutian locations, where temperatures are less extreme than on the mainland.

At St. Paul, annual precipitation amounts to 24.54", including 59.2" of snow (AEIDE 1977:20), while at St. George corresponding figures are 29" and 32", respectively (SWRP 1976:13). Precipitation is distributed fairly evenly throughout the year, peaking to 3-3½" per month in August, September, and October (SWRP 1976:16). Likewise, occurrences of precipitation are characteristically frequent, but short lived. This is evident in a relatively low figure for the greatest amount of precipitation recorded on a single day in St. Paul, 1.93" (AEIDC 1977:20), as well as in a high frequency of sky cover, a yearly average 'of 8.7 tenths (SWRP 1976:17). Snow has been reported during all but July and August at St. Paul (SWRP 1976:17).

Wind is a dominant feature of the weather in the Pribilofs and, in terms of both frequency and velocity, is most similar to that in the Aleutian Islands. Average wind speed is approximately 14-16 knots from all directions, with extreme winds ranging from SO-60 knots having been reported

TABLE 4-1 :--Temperature data for St. Paul and St. George

	St. Paul[1]	St. George[2]
Summer temperature range	37°-51°	35°-52°
Winter temperature range	19°-36°	27°-35°
Extreme temperatures	-26°/64°	-7°/63°
Mean date of last spring occurrence of 32°	2 June	NA
Mean date of first fall occurrence of 32°	24 Sept	NA

SOURCE: SWRP (1976:13, 20)

NOTE: All temperatures in °F. "NA" = data not available.

[1]Based on 50 year record, except for mean 32° dates, which are based on 25 year record.

[2]Based on 5 year record.

from most directions. Wind direction is very evenly distributed and of 16 compass headings, no direction accounted for more than 9% nor less than 5% of the winds (SWRP 1976:26).

As indicated above, the dominant controlling factor for Pribilof climate is the Bering Sea. Surface circulation in the Bering Sea as a whole is counterclockwise, although factors such as winds and tide alter this in places (Figure 4-4). Tides in the Pribilofs are diurnal with the daily range being approximately 3.2 feet. Currents near the islands are usually from l-2 knots, although with strong winds they increase to 3 knots.

Ocean temperature at the surface varies within a narrow range in the vicinity of St. Paul and St. George, with a February low of about 32.5°F and an August high of about 47.0°F (SWRP 1976:34, Fig. 49). Sea ice distribution is indicated in Figure 4-5 for the month of maximum ice extent, February. The Pribilofs are near the southern limit of sea ice in most years, and residents of St. Paul state that ice surrounds that island in about only one of every 10 years. Only rarely will sea ice extend as far as 35 miles south of St. George (USCP 9:257 [7th - 1964 edition]). In one year in the mid-1830s, the ice surrounding the islands remained much longer than normal, limiting hunting and fishing activities drastically and preventing many female fur seals from giving birth on land (Elliott 1881:48-49).

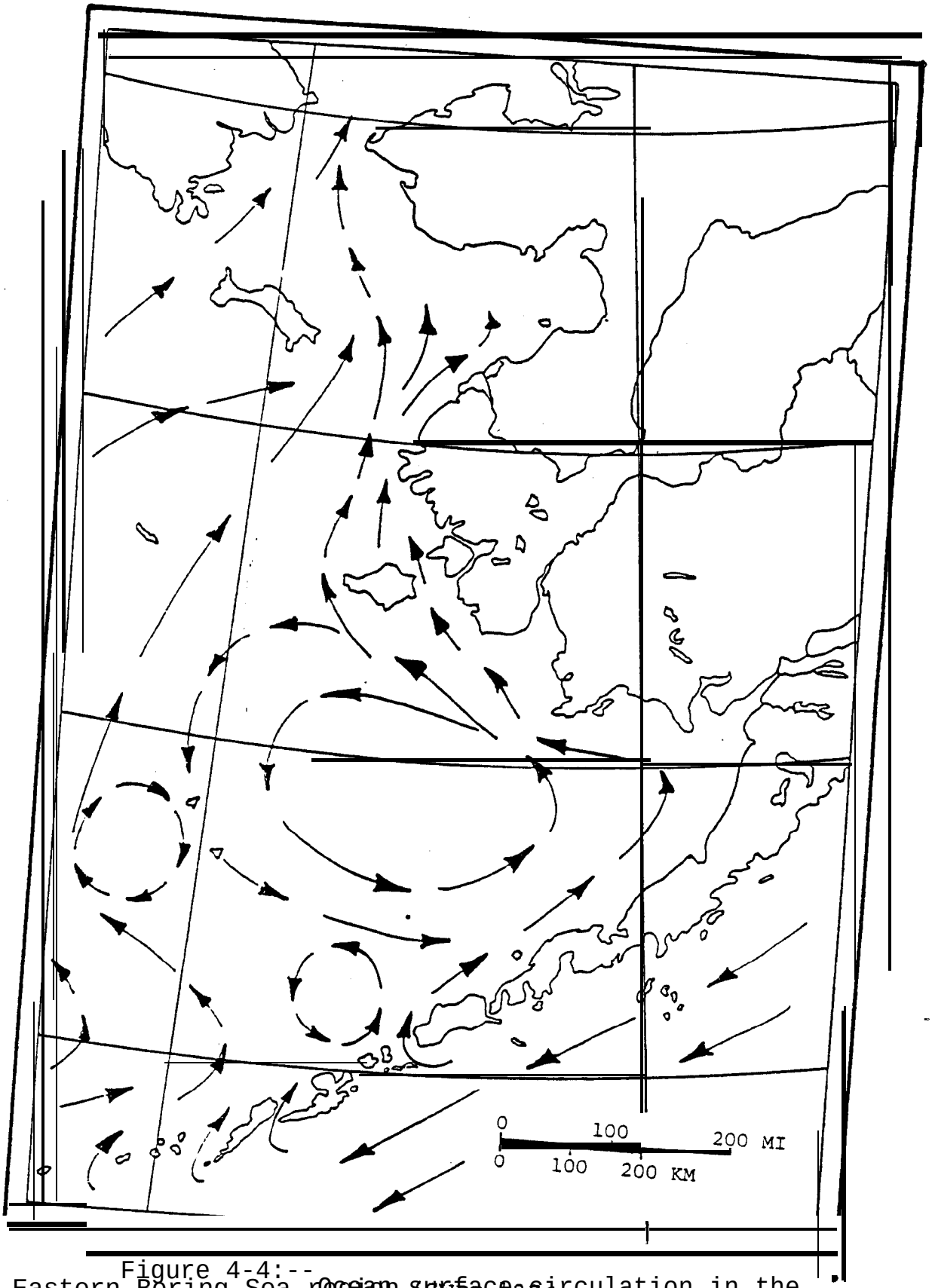

Figure 4-4:-- Ocean surface circulation in the Eastern Bering Sea region (SWRI 1978:29).

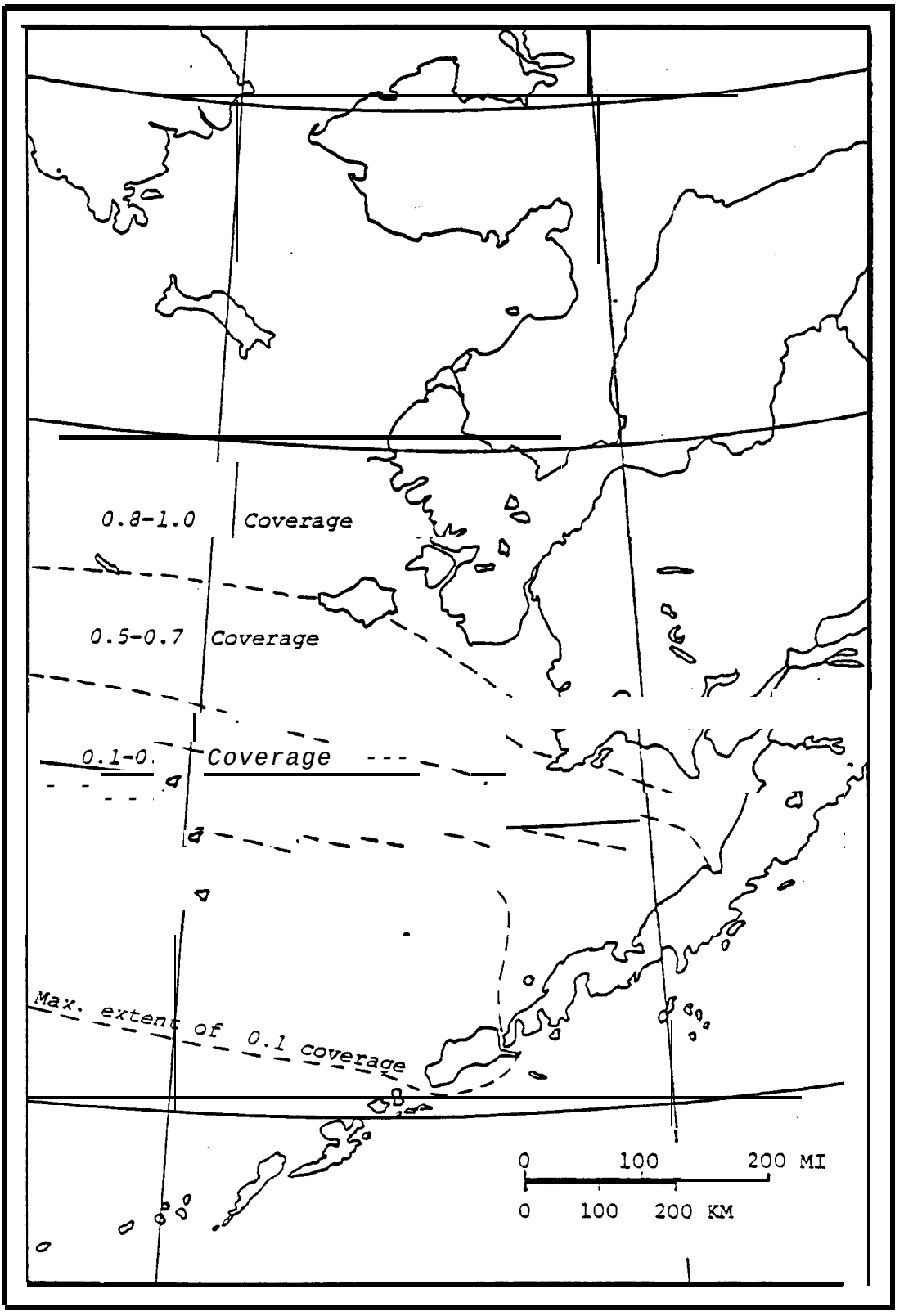

Figure 4-S: --Maximum extent of sea ice coverage in the Bering Sea (SWRP 1976:30).

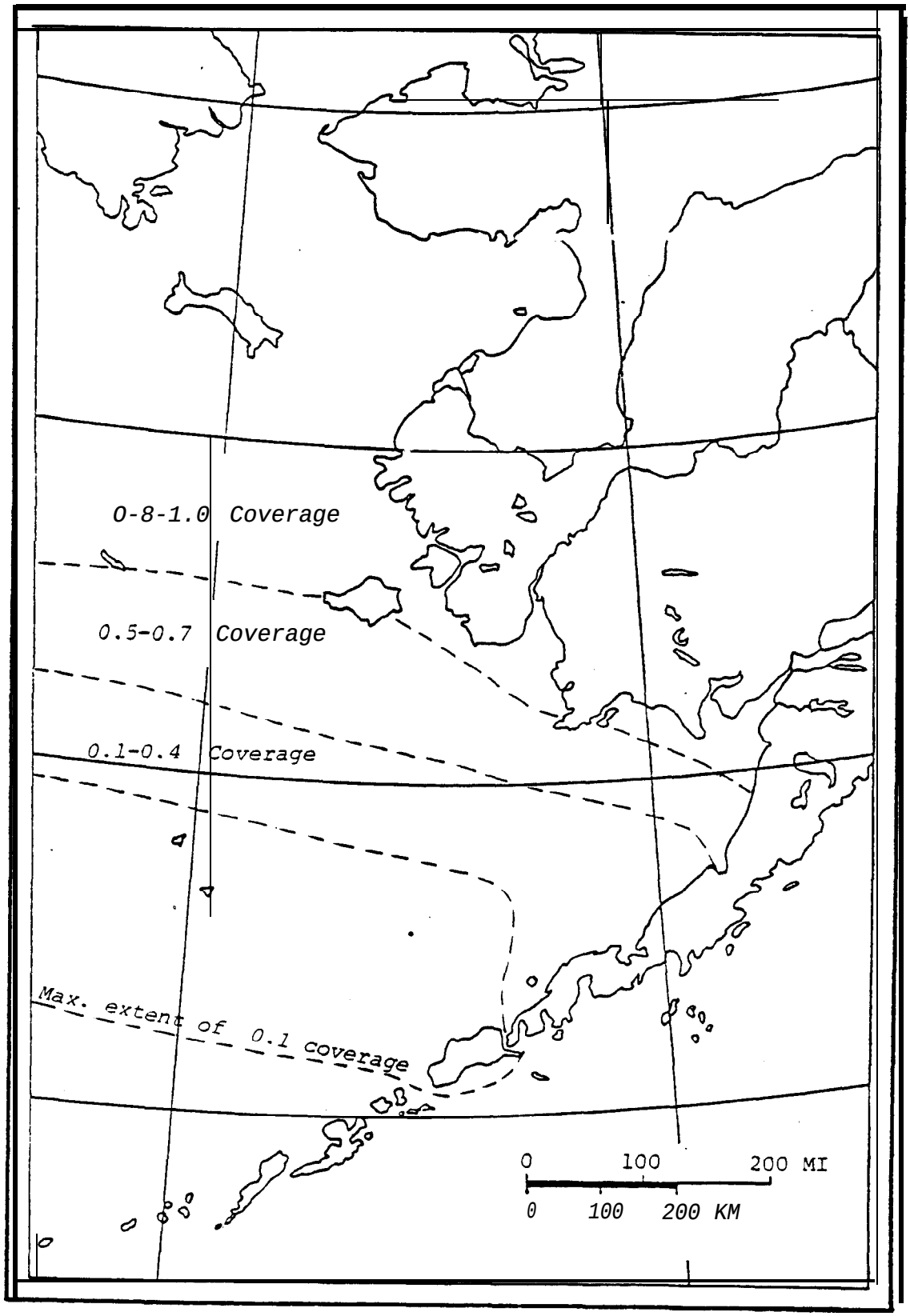

Figure 4-5:--Maximum extent of sea ice coverage in the Bering Sea (SWRP 1976:30).

Storm tracks generally follow from southwest to northeast in the Pribilof Island region. During winter and summer, these tracks are usually secondary ones, derived from the major tracks of the predominate Aleutian low pressure system. In spring, however, some major storms may veer northeastwardly towards the Pribilofs from the Aleutians (SWRP 1976:5, Fig. 4).

Fauna and flora

This section presents an overview of the major animal and plant species in the Pribilof region. Additional details concerning various species will be included in the discussion of subsistence pursuits in Chapter 5. It may be noted that, as in the Aleutian Islands, marine fauna dominate the spectrum of fauna1 resources.

Terrestrial Fauna

Only three species of land mammals are native to the Pribilof Islands. These consist of the fox (Alopex lagopus) which Preble and McAtee assume' was originally brought to the islands by ice and which is slightly differentiated from the foxes of the mainland (1923:5). On St. Paul is found the shrew (Sorex pribilofensis), and on St. George the lemming (Lemmus nigripes), both of which have been so modified due to their insular isolation that their origins cannot be ascertained (Preble and McAtee 1923:5).

Occasional or accidental "visitors" to the Pribilof Islands include polar bears, which have been reported from both islands a number of times (Preble and McAtee 1923:103), and red fox (Veniaminov 1840, cited in Elliott 1881:147), both apparently arriving via sea ice and killed soon thereafter.

Marine Fauna

Mammals. Of the marine mammals in the Pribilof region, most appear to be near either the northern or southern limits of their ranges. Table 4-2 itemizes the common and scientific names of those species which will be discussed. According to Haley (1978), those species which occur at or near their southern limit in the Pribilofs include the following: ringed seal, bearded seal, spotted seal, ribbon seal, walrus, and bowhead whale. The Pribilofs lie at or near the northern limit of the following: harbor seal, sea lion, Dall's porpoise, giant bottlenose whale, sperm whale, and right whale. The killer whale occurs both north and south of the Pribilofs, and the humpback whale's southern range includes the Pribilof region. The beluga whale does not occur as far south as the Pribilof Islands' in the part of the Bering Sea.

When the Pribilof Islands were discovered by the Russians, sea otters were very abundant, with ". . . as many as 5,000 . . . said to have been taken from St. Paul during the first year of its occupancy. They were abundant also on

TABLE 4-2 :--Sea mammals discussed in text

Common Name	Scientific Name'
Fur seal	Callorhinus ursinus
Ringed seal	Phoca hispida
Bearded seal	Erignathus barbatus
Spotted seal	Phoca vitulina largha
Ribbon seal	Phoca fasciata
Harbor seal (hair seal)	Phoca vitulina richardii
Sea otter	Enhydra lutris
Sea lion	Eumetopias jubatus
Walrus	Odobenus rosmarus ,
Beluga whale	Delphinapterus leucas
Killer whale	Orcinus orca
Dall's porpoise	Phocoenoides dalli
Giant bottlenose whale	Berardius bairdii
Sperm whale	Physeter macrocephalus
Bowhead whale	Balaena mysticetus
Right whale	Balaena glacialis
Humpback whale	Megatera novaeangliae

'SOURCE: Haley (1978)

St. George" (Osgood et al. 1915:130). Within a short time, however, their numbers were drastically reduced, so that by 1811 they had become scarce and within the next 30 years extinct (Veniaminov, quoted in Elliott 1881:147). Osgood et al. (1915:130) report that "small numbers and single individuals" were reported after the turn of the century. An attempt in the 1960s to reintroduce the animals has been marginally successful, with only infrequent sightings of sea otters occurring at St. George. Prior to their near extinction, and now following their reintroduction, sea otters are at their northernmost range in the waters of the Pribilof Islands (Preble and McAtee 1923:5).

The major sea mammal of the Pribilof Islands is the fur seal, which breeds in large numbers only on St. Paul and St. George, and the Commander Islands and Sakhalin, both in the Soviet Union. Approximately 80% of the world's population breeds in the Pribilofs, most on the two largest islands, but a few on Sea Lion Rock as well'. The fur seal population in Alaska is estimated to be 1.4 million animals (U.S. Department of Commerce 1977:1).

Fish. The fish resources of the Eastern Bering Sea region include various bottom fish (pollack, perch, cod, and blackcod), flounders (turbot, rock sole, and others), and halibut. The Pribilof Islands lack sizeable streams, and, hence, also lack anadromous fish.

Invertebrates. A number of species of commercially important shrimp and crab occur in the Pribilof region. Of animals living in the littoral zone, the most important from a subsistence perspective include sea urchins (Strongylocentrotus sp.), limpets (Acamea sp.), mussels (probably Mytilus edulis), octopus, and sea cucumbers.

Avifauna

The Pribilof Islands are perhaps the most important location for marine birds in North America. Vast numbers of seabirds, including most of the world's population of red-legged kittiwakes, inhabit the islands, most nesting on the steep cliffs that are found along much of the coast. The number of marine birds nesting in the Pribilofs has been estimated at nearly 2,800,000 (Table 4-3), while the total number of different species found is 191 (Table 4-4). Of these 191, 15 species are found either only in the Pribilofs or in less than five other locations in North America.

Flora

The vegetation of both St. Paul and St. George is dominated by various grasses and sedges characteristic of the subarctic tundra of the Aleutian Islands. A host of flowering plants, including lupines, lousewarts, monkshood, and others, bloom in the summer season, but only a few varieties of berries, including the crowberry (Empetrum nigrum) and the cloudberry (Rubus chamaemorus), are found.

TABLE 4-3:--Marine birds nesting in the Pribilof Islands

Species	St. George	St. Paul	Walrus I.	Otter I.?	Total
Northern fulmar	70,000	700		P	70,700
Red-faced cormorant	5,000	2,500	P	200	7,700
Black-legged kittiwake	72,000	31,000	P	5,000	108,000
Red-legged kittiwake	220,000	2,200		X	222,200
Murre			X	10,000	10,000
Common murre	190,000	39,000	200		229,200
Thick-billed murre	1,500,000	110,000	100		1,610,100
Parakeet auklet	150,000	34,000		X	184,000
Crested auklet	28,000	6,000			34,000
Least auklet	250,000	23,000			273,000
Horned puffin	28,000	4,400		X	32,400
Tufted puffin	6,000	1,000		X	7,000
Total	2,519,000	253,800	300	15,200	2,788,300

SOURCE: U.S. Department of the Interior (1978)
X = Present P = Probably Present

TABLE 4-4:--Birds of the Pribilof Islands

Common Name[1]	Scientific Name[2]
Common loon*	Gavia immer
Yellow-billed loon	adamsii
Red-throated loon	Gavia stellata
Arctic loon	Gavia arctica
Red-necked grebe	Podiceps grisegena
Horned grebe	Podiceps auritus
Short-tailed albatross*	Diomedea albatrus
Black-footed albatross*	Diomedea nigripes
Fulmar	Fulmarus glacialis
Slender-billed shearwater	tenuirostris
Scaled petrel	Pterodroma inexpectata
Fork-tailed petrel*	Oceanodroma furcata
Leach's petrel*	Oceanodroma leucorhoa
Pelagic cormorant	Phalacrocorax pelagicus
Red-faced cormorant	Phalacrocorax urile
Whooper swan*	Olor cygnus
Whistling swan	Olor columbianus
Canada goose	Branta canadensis
Black brant	bernicla
Emperor Goose	Philacte canagica
White-fronted goose	Anserrons
Bean goose*	Anser fabalis
Snow goose	Chen caerulescens
Mallard	Anas platyrhynchos
Gadwall	Anas strepera
Pintail	Anas acuta
Falcated teal*	Anas falcata
Common teal	Anas crecca
Green-winged teal	Anas crecca
Baikal teal	Anas formosa
European wigeon	Anas penelope
American wigeon	Anas americana
Northern shoveler	Anas clypeata
Ring-necked duck*	Aythyais
Redhead	Aythya americana
Garganey*	Anas querquedula
Common Pochard	Aythya ferina
Canvasback*	Aythyaneria
Greater scaup	Aythya
Tufted duck	Aythya fuligula
Common goldeneye	Bucephala clangula
Barrow's goldeneye	Bucephala islandica
Bufflehead	Bucephala albeola
Old-squaw	Clangula hyemalis

TABLE 4-4:--(Continued)

Common Name[1]	Scientific Name[2]
Harlequin duck	Histrionicus histrionicus
Steller's eider	Polysticta stelleri
Spectacled eider*	Somateria fischeri
Common eider	Somateria mollissima
King eider	Somateria spectabilis
White-winged scoter	Melanitta deglandi
Surf scoter*	Melanitta perspicillata
Common scoter	Melanitta nigra
Hooden merganser*	Lophodytes cucullatus
Common Merganser	Mergus merganser
Red-breasted merganser	Mergus serrator
Smew	Mergus albellus
Rough-legged hawk*	Buteo lagopus
Bald eagle*	Haliaeetus leucocephalus
Steller's sea eagle*	Haliaeetus pelagicus
Osprey*	Pandion haliaetus
Gyrfalcon	Falco rusticolus
Peregrine falcon	Falco peregrinus
Sandhill crane	Grus canadensis
European coot*	Fulica atra
Black oystercatcher*	Haematopus bachmani
Ringed plover*	Charadrius hiaticula
Semipalmated plover	Charadrius semipalmatus
Mongolian plover*	Charadrius mongolus
American golden plover	Pluvialis dominica
Black-bellied plover*	Pluvialis squatarola
Killdeer*	Charadrius vociferus
Ruddy turnstone	Arenaria interpres
Common snipe	Gallinago gallinago
Jack snipe*	Lymnocryptes minimus
Far Eastern curlew*	Numenius madagascariensis
Whimbrel	Numenius phaeopus
Bristle-thighed curlew	Numenius tahitiensis
Eskimo curlew*	Numenius borealis
Common sandpiper*	Actitis hypoleucos
Wood sandpiper	Tringa glareola
Wandering tattler	Heteroscelus incanus
Polynesian tattler	Heteroscelus brevipes
Spotted redshank*	erythropus
Greenshank*	Tringa nebularia
Greater yellow legs*	melanoleuca
Lesser yellow leg	Tringa flavipes
Knot	Calidris canutus
Great knot*	Calidris tenuirostris
Rock sandpiper	Calidris ptilocnemis
Sharp-tailed sandpiper	alidris acuminata
Pectoral sandpiper	Calidris melanotos
Baird's sandpiper	Calidris bairdii

TABLE 4-4:--(Continued)

Common Name[1]	Scientific Name[2]
Least sandpiper	Calidris minutilla
Long-toed stint*	Calidris subminuta
Rufous-necked sandpiper*	Calidris ruficollis
Dunlin	Calidris alpina
Spotted sandpiper*	Actitis macularia
Temminck's stint*	Calidris temminckii
Short-billed dowitcher	Limnodromus griseus
Long-billed dowitcher	Limnodromus scolopaceus
Stilt sandpiper*	Micropalama himantopus
Seimpalmated sandpiper	Calidris pusilla
Western sandpiper	Calidris mauri
Buff-breasted sandpiper*	Tryngites subruficollis
Bar-tailed godwit	Limosa lapponica
Ruff	Philomachus pugnax
Sanderling	Calidris alba
Red phalarope	Phalaropus fulicarius
Northern phalarope	Phalaropus lobatus
Parasitic jaeger	Stercorarius parasiticus
Pomarine jaeger	Stercorarius pomarinus
Long-tailed jaeger	Stercorarius longicaudus
Glaucous gull	Larus hyperboreus
Glaucous-winged gull	Larus glaucescens
Slaty-backed gull	Larus schistisagus
Black-headed gull	Larus ridibundus
Ivory gull	Pagophila eburnea
Herring gull*	Larus argentatus
Black-legged kittiwake	Rissa tridactyla
Red-legged kittiwake	Rissa brevirostris
Ross' gull	Rhodostethia rosea
Sabine's gull	Xema sabina
Common tern	Sterna hirundo
Arctic tern	Sterna paradisaea
Common murre	Uria aalge
Thick-billed murre	Uria lomvia
Dovekie*	Alle alle
Pigeon guillemot	Cepphus columba
Marbled murrelet*	Brachyramphus marmoratus
Ancient murrelet	Synthliboramphus antiquus
Parakeet auklet	Cyclorrhynchus psittacula
Crested auklet	Aethia cristatella
Least auklet	Aethia pusilla
Horned puffin	Fratercula corniculata
Tufted puffin	Lunda cirrhata
Oriental cuckoo*	Cuculus saturatus
Snowy owl	Nyctea scandiaca
Short-eared owl	Asio flammeus
Boreal owl*	Aegolius funereus

TABLE 4-4:--(Continued)

Common Name[1]	Scientific Name[2]
Saw whet*	Aegolius acadicus
Common swift*	Apus apus
White-rumped swift*	Apus pacificus
Common flicker*	Colaptes auratus
Skylark	Alauda arvensis
Violet-green swallow	Tachycineta thalassina
Tree swallow	Iridoprocne bicolor
Bank swallow*	Riparia riparia
Barn swallow*	Hirundo rustica
Cliff swallow*	Petrochelidon pyrrhonota
Purple martin*	Progne subis
Raven*	Corvus corax
Winter wren	Troglodytes troglodytes
Robin*	Turdus migratorius
Eye-browned thrush	Turdus obscurus
Gray-cheeked thrush*	Catharus minimus
Wheatear	Oenanthe oenanthe
Siberian rubythroat*	Luscinia calliope
Water pipit	Anthus spinoletta
Whaite wagtail*	Motacilla alba
Yellow wagtail	Motacilla flava
Gray wagtail*	Motacilla cinerea
Bohemian waxwing*	Bombycilla garrulus
Arctic warbler*	Phylloscopus borealis
Golden-crowned kinglet*	Regulus satrapa
Ruby-crowned kinglet*	Regulus calendula
Yellow warbler*	Dendroica petechia
Yellow-rumped warbler*	Dendroica coronata
Wilson's warbler*	Wilsonia pusilla
Orange-crowned warbler*	Vermivora celata
Rusty blackbird*	Euphagus carolinus
Brambling*	Fringilla montifringilla
Japanese hawfinch*	Coccothraustes coccothraustes
Bullfinch*	Pyrrhula pyrrhula
Pine grosbeak*	Pinicola enucleator
Gray-crowned rosy finch	Leucosticte tephrocotis
Common rose finch*	Carpodacus erythrinus
Redpoll	Carduelis flammea
Hoary redpoll	Carduelis hornemanni
Pine siskin*	Carduelis pinus
Red crossbill*	Loxia curvirostra
White-winged crossbill*	Loxia leucoptera
Savannah sparrow	Passerculus sanwichensis
Slate-colored junco*	Junco hyemaliis
White-crowned sparrow	Zonotrichia leucophrys
Golden-crowned sparrow	Zonotrichia atricapilla

TABLE 4-4:--(Continued)

Common Name[1]	Scientific Name[2]
Fox sparrow	Passerella iliaca
Song sparrow*	Melospiza melodia
Lapland longspur	Calcarius lapponicus
Snow bunting	Plectrophenax nivalis
McKay's snow bunting	Plectrophenax hyperboreus

[1]Source: Johnson (1978:46-47) and Audubon Society data.

[2]Source: Armstrong (1980).

*Accidental

Trees are limited to dwarf species, such as the dwarf willow (Salix sp.), which grow most frequently on the thinly vegetated higher hills to a few inches in height.

Aleutian-Pribilof Islands comparison

Significant environmental differences exist between the Aleutian Islands and the Pribilof Islands in terms of potential for past and present human habitation and subsistence patterning. These differences, many of which are interrelated, are as follows:

(1) The Pribilof Islands lack significant streams. Such streams are necessary both for drinking water as well as for runs of anadromous fish, such as salmon.

(2) The Pribilofs lack substantial bay, reef, and intertidal systems. Areas such as these support the important invertebrate fauna in the Aleutian archipelago, and protected bays also provided safe access to the sea by hunters and fishermen.

(3) The Pribilof Islands lack substantial accumulation of driftwood for manufacturing purposes and fuel.

(4) The great number of fur seals present during much of the year renders a good portion of the coastline-

difficult of access during that time, preventing people from collecting marine invertebrates from much of the coast.

(5) The Pribilof Islands are isolated from other islands and the mainland. The islands can not be seen from any other land mass, nor can any other land mass be seen from the Pribilofs. This is very likely the single most compelling reason for the lack of precontact human occupation of these islands, since no other similarly isolated island in the North Pacific/Bering Sea region (e.g., St. Matthew Island, the Commander Islands in the western Aleutian archipelago) were occupied in the precontact period.

(6) Nowhere in the Aleutian Islands do sea mammals congregate in as great numbers as do fur seals in the Pribilof Islands. Therefore, it follows that the fur seal would be a major component of Aleut subsistence in the Pribilofs.

CHAPTER 5

SUBSISTENCE RESOURCES AND UTILIZATION IN THE PRIBILOF ISLANDS

Introduction

This chapter offers an item-by-item inventory of the subsistence resources in the Pribilof Islands, with information compiled from historical sources as well as from field research by the authors. This inventory primarily includes, insofar as data are available, information pertaining to the second research objective discussed in Chapter 1 (concerning the time, manner, and place of resource procurement). As noted in Chapter 1, the reader should be aware that there are some limitations on the data.

Table 5-1 lists those subsistence categories covered in this chapter. The list is organized for convenience only, and no significance should be attached to the order in which resources are presented or to the grouping of various resources in certain categories. In Table 5-1, resources are numbered to correspond to the inventory in the text. Discussion of the ranking of subsistence resources in terms of dietary and cultural significance will be undertaken in Chapter 6.

TABLE 5-1: --Inventory of Pribilof subsistence resources

Subsistence Resource*	Subsistence Resource*
1. Fur seals	10. Least auklets
2. Sea lions	11. Least auklet eggs
3. Hair seals	12. Lake ducks
4. Walrus and whales	13. Sea ducks
5. Reindeer	14. Other birds and eggs
6. Halibut, cod, and other fish	15. Marine invertebrates
7. Murres and murre eggs	16. Berries
8. Kittiwakes and kittiwake eggs	17. Other plants
9. Cormorants and cormorant eggs	18. Poultry, livestock, and gardening

*Numbers correspond to those used in the subsistence resource discussions in this chapter.

Inventory of subsistence resources

1. Fur Seals

Since the first Aleuts came to the Pribilof Islands. in the late 1700s, fur seal meat has been the dietary staple. In the past, large numbers of seals, including pups. were killed each year specifically for food, although this has changed over time. Prior to refrigeration, seal meat was either dried or salted for year-round use.

Elliott (1881:22) gives interesting statistics concerning the amount of fur seal meat eaten each year at St. Paul: "[T]hey consume on an average fully 500 pounds a day the year round: and they are, by the permission of the Secretary of the Treasury, allowed every fall to kill 5,000 or 6,000 seal-pups, or an average of 22 to 30 young-'kotickie' for each man, woman, and child in the settlements. The pups will dress 10 pounds each. This shows an average consumption of nearly 600 pounds of seal-meat by each person, large and small, during the year." Elliott adds that the Aleuts supplemented their basic diet of fur seal with various imported foods, including salt beef and pork, potatoes, onions, butter, and sweet crackers (1881:22-23).

Osgood et al. also computed the yearly fur seal needs of the Aleuts in 1914 (1915:142):

> To ascertain the amount of seal meat really necessary for the natives, a conference was held on St. Paul with the agent in charge, Mr. Hatton, and

> with the native chief, John Stepetin. It appeared that a family of eight persons would consume in one month 14 fresh seal carcasses or 7 salted ones; hence fresh meat would be eaten at the rate of 1 3/4 carcasses per capita per month and salt meat at half that rate or seven-eighths of a carcass per capita per month.
>
> As fresh seal meat is available for eight months in the year and salt meat must be relied upon for the remaining four months, it follows that the total amount of seal meat needed for one native for a year is 17.5 carcasses. This amounts to not more than one pound of meat free of bone per day for each person. A seal carcass as roughly dressed by the natives and including bone weighs about 35 pounds. St. Paul, with a population of 192 natives, is therefore entitled to 3,360 seal carcasses per year for native food, and St. George, with about half that number of natives, to about half that amount of meat.

In the 1890s, the fur seal population of the Pribilofs was in a sharp decline, due mostly to pelagic sealing. The government took steps to control the herd, as Jones (1980:37) relates:

> International negotiations, beginning in 1891 and continuing throughout the period of the second lease [1890-1910], were ineffective. Piecemeal measures such as prohibiting pelagic sealing during certain periods of the year and the use of firearms and explosives in seal hunting as well as limiting the Pribilof annual harvest for a few years to 7,500 seals for Aleuts' food failed to halt the seal decline. Neither did a federal law prohibiting United States citizens from pelagic sealing.

Tables 5-2 and 5-3 show the importance of seal pups and bachelors for food in the period from 1870 to 1889. In those years, an average of 7909 seals per year were used for food on St. Paul and 1856 per year on St. George. These figures include an average of 3378 seal pups per year on St. Paul and 1403 per year on St. George.

TABLE 5-2:--Fur seals killed on St. Paul for all purposes from 1870 to 1889, inclusive

Year	Seals killed for natives' food				Seals killed for skins for lessees			Totals of bachelors killed, accepted, and rejected			Grand totals of seals killed for all purposes
	Pups	Bachelors	Skins accepted	Skins rejected	Bachelors	Skins accepted	Skins rejected	Bachelors	Skins accepted	Skins rejected	
1870	2800	6449	0	6449	6065	6017	48	12514	6017	6497	15314
1871	2877	2341	2290	51	75585	74628	957	77926	76918	1008	81803
1872	5121	6916	5365	1551	69782	69576	206	76698	74941	1757	81819
1873	5489	2090	1198	892	74408	73884	524	76498	75082	1416	81987
1874	4897	4874	4225	649	88368	88258	110	93242	92483	759	98139
1875	3745	6282	5784	498	84933	84860	73	91215	90644	571	94960
1876	3958	5061	3064	1997	74138	71137	1	79199	77201	1998	83157
1877	5007	4041	2853	1188	58762	58732	30	62803	61585	1218	67810
1878	5206	4718	3632	1086	78595	78570	25	83313	82202	1111	88519
1879	5071	5970	3898	2072	77280	77280	0	83250	81178	2072	88321
1880	4413	4466	3408	1418	75900	75872	28	80366	78920	1446	84779
1881	0	7538	6068	1470	76236	76169	67	83774	82226	1537	83774
1882	0	5175	3362	1813	74659	74581	78	79834	77943	1891	79834
1883	2982	3168	2194	974	57145	57070	75	60313	59264	1049	63295
1884	2741	3907	2582	1325	82213	82086	127	86120	84668	1452	88861
1885	2788	3184	2508	676	82908	82866	42	86092	85374	718	88880
1886	2824	3081	2480	601	82180	82150	30	85261	84630	631	88085
1887	2177	4207	3975	232	82708	82679	29	86915	86654	261	89092
1888	2178	3762	3700	62	80330	80314	16	84092	84014	78	86270
1889	2280	3400	2570	830	81712	81698	14	85112	84268	844	87392
Total	67554	90630	64796	25834	1463907	1461427	2480	1554537	1526212	28314	1622091

TABLE 5-3:--Fur seals killed on St. George for all purposes from 1870 to 1889, inclusive

	Seals killed for natives' food				Seals killed for skins for lessees			Totals of bachelors killed, accepted, and rejected			Grand totals of seals killed for all purposes
	Pups	Bachelors	Skins accepted	Skins rejected	Bachelors	Skins accepted	Skins rejected	Bachelors	Skins accepted	Skins rejected	
1870	1200	0	0	0	7259	7259	0	7259	7259	0	8459
1871	2090	237	237	0	18830	18830	0	19067	19067	0	21137
1872	2000	0	0	0	25000	25000	0	25000	25000	0	27000
1873	2190	0	0	0	25000	25000	0	25000	25000	0	27190
1874	2446	0	0	0	10000	10000	0	10000	10000	0	12446
1875	1500	0	0	0	10000	10000	0	10000	10000	0	11500
1876	1500	0	0	0	10000	10000	0	10000	10000	0	11500
1877	1500	256	256	0	14744	14744	0	15000	15000	0	16500
1878	1500	1532	1216	316	17772	17772	0	19304	18988	316	20804
1879	1506	843	564	279	19841	19758	83	20684	20322	362	22190
1880	1330	702	565	137	18907	18830	77	19609	19395	214	20939
1881	1031	812	509	303	19446	19360	86	20258	19869	389	21289
1882	0	483	371	112	19495	19440	55	19978	19811	167	19978
1883	1000	475	468	7	14739	14675	64	15214	15143	71	16214
1884	1500	345	223	122	14728	14620	108	15073	14843	230	16573
1885	1080	319	304	15	14745	14686	59	15064	14990	74	16144
1886	1286	544	413	131	14606	14578	28	15150	14991	159	16436
1887	1356	585	471	114	14727	14725	2	15312	15196	116	16668
1888	978	1409	1321	88	14647	14582	65	16056	15903	153	17034
1889	1071	512	280	232	13642	13641	1	14154	13921	233	15225
Total	28064	9054	7198	1856	318128	317550	628	327182	324698	2484	355246

SOURCE: Jordan et al. (1898:208)

Also evident from the figures in Tables 5-2 and 5-3 is that the numbers of seals taken for food are high, indicating the importance of this resource. Nevertheless, these seals represent, on the whole, about only 10% of all seals taken. When it is noticed that the majority of bachelor seals taken for food also provided acceptable skins for commercial purposes (and, thus, were not a "loss" in terms of profit-making interests), the percentage of animals killed exclusively for food becomes even lower.

Part of the government's efforts to control the seal herd was to eliminate the taking of pups for food. This was a severe action from the Aleut point of view, as pup meat was greatly preferred. The statement of Kerrick Artomanoff, Aleut chief of St. Paul, puts it well (U.S. Congress, Senate 1896:146):

> Our people like the meat of the seal, and we eat no other meat so long as we can get it.
>
> The pup seals are our chicken meat . . . but the Government agent forbade us to kill any in 1891 . . . and he gave us other meat in place of pup meat, but we do not like any other meat as well as the pup-seal meat.

To this day, the traditional value of fur seal pups to the Pribilof Aleuts has not been diminished by pup killing having been made illegal.

St. Paul. Fur seals are harvested commercially today on St. Paul; An overview of the harvesting procedure will provide a perspective from which to view the subsistence use

of these animals. There are presently several fur seal rookeries and hauling areas on St. Paul; these are shown in Figure 5-l. Seals begin to arrive on the island in late spring, with males, which can weigh from 300 to 600 pounds, forming harems and defending them and their territory. Females, weighing from 65 to 110 pounds, give birth beginning in mid-June, with a peak in early July. In late June and continuing throughout the summer, younger, non-breeding males arrive at the hauling areas adjacent to the rookeries. By October, seals begin to leave the island, with most leaving in early November.

The commercial harvest begins in late June (29 June in 1981) and lasts for five weeks. During this time, approximately 25,000 animals are taken. The sealing crew rotates among several of the hauling areas for the harvest, moving to a new one each day. Subadult males are gathered together away from the rookeries and hauling area. From this group, small pods are separated off and led to the stunners, men with long wooden clubs who strike each seal on the head to crush its thin skull. Almost immediately, the "sticker" makes a quick cut to the heart and kills the seal. Following this, cuts are made in the skin around the flippers and elsewhere, and the pelt is pulled from the carcass. Both the skins and the carcasses are arranged in rows on the grass to facilitate counting. Next, butchering of the seals begins with some people (under contract to the Tanadgusix

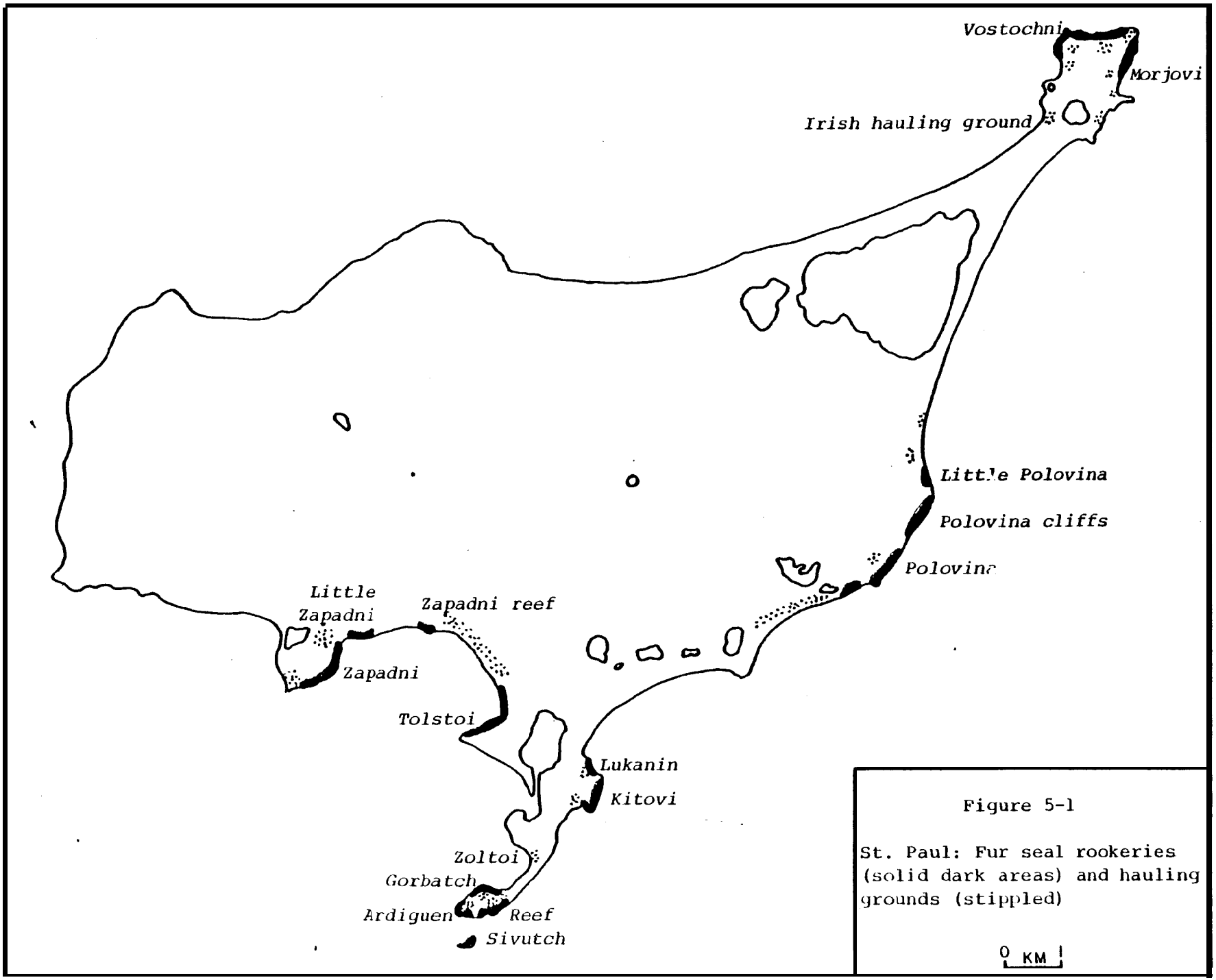

Figure 5-1

St. Paul: Fur seal rookeries (solid dark areas) and hauling grounds (stippled)

Corporation, the village profit corporation formed in accordance with the Alaska Native Claims Settlement Act of 1971) removing the seal "sticks"-the penis bone-which are sold to the Orient. The carcasses are then loaded onto trucks which take them back to.the village.

The fur seal operation is a two-part commercial enterprise. On the one hand, the government controls the killing of the seals and the skins that are removed. When the skins are brought into the village, they are taken to blubbering, brine, and boxing sheds to prepare them for shipment to South Carolina, where the Fouke Fur Company has an exclusive contract to process them. On the other hand, the Tanadgusix Corporation owns the seal carcasses and is responsible for them once the skins have been removed. After leaving the killing field, the carcasses are brought to the by-products plant, where they are cut into several pieces by bandsaw and frozen in a large freezer room. The meat processed in this manner is currently sold for a variety of purposes, including fishing bait and dog food.

St. Paul residents obtain fur seal meat directly from the killing grounds. Following the removal of the seal "sticks" and prior to their being put in trucks, the carcasses are available to anyone who would like to take meat or other parts for food. At the start of the sealing season, desire for fresh seal meat is high, and many people avail

themselves of the opportunity to obtain some. As the season progresses, relatively fewer people will come each day, although at the end of the season interest is again high. People not only want to satisfy their immediate desires for fresh meat, but also want to take enough meat to freeze until the start of next year's sealing season. As there is plenty of meat from the 25,000 or so animals killed each year, there appears to be no great formality or protocol among those people taking meat. People without transportation to the killing fields will arrange with friends or family members to get their meat for them. By these means, all families in St. Paul obtain seal meat.

A rough estimate by the Tanadgusix Corporation of the amount of fur seal consumed per household on St. Paul is as follows: During the summer months, about 14-20 pounds are used weekly by each of about 125 households. In winter each household consumes an average of 15-20 35-pound seals, or about 2,000 seals totaling 70,000 pounds for the entire community.

Many parts of the fur seal are used as food in St. Paul and St. George. Of special importance are the fore flippers, which are put in barrels with salt to make lastax, a food which can store for over a year. Table 5-4 lists various parts of the fur seal, their Aleut names, and their use as food. Except for differences in the spelling of some

TABLE 5-4 :--Fur seal parts and their Aleut names and food use

Part of animal	Aleut name	Used as food
Brain	Qiilix̂	Rarely
Tongue	Agnax̂	Yes
Shoulder	Chuyux̂	Yes
Fore flipper	Lastax̂	Yes
Brisket	Rudiinkax̂	Yes
Trunk	Sadukax̂	Yes
Heart	Kanuuǧix̂	Yes
Liver	Aaǧix̂	Yes
Kidney	Dax̂tux̂	Yes
Hind flipper	Kitax̂	Yes
Testis	Samlaqaẋ	No
Head	Kamgix̂	No
Esophagus	Anǧiin	No
Seal-stick (baculum)	Tugaadix̂	No
Stomach	Sanǧux̂	Rarely
Intestine	Chiidx̂in	Rarely
Pancreas	Kalugushin[1]	Yes[1]

SOURCE: (Except as noted below) Fr. Michael Lestenkof, St. Paul, and Iliodor Philemonof, Anchorage.

'From Scheffer (1948:131).

of the Aleut names, this list differs little from that prepared by Scheffer in 1945 (Scheffer 1948). Elliott reports from over 100 years ago that the Aleuts "do make certain special uses of the liver, gall, testes, etc., but the exact application I could not satisfactorily determine" (1881:75). As far as the authors were able to learn, aside from handicraft uses of some parts of the fur seal (e.g., throat), there are no non-food uses to which these animals are currently put.

St. George. Commercial seal harvesting on St. George took place until 1972. In that year, a moratorium was imposed on further sealing of any kind by the North Pacific Fur Seal convention, an international agreement among the United States, Japan, Canada, and the Soviet Union. Beginning in 1973, no seals could legally be killed on that island, except for scientific purposes. The moratorium was designed to provide a control situtation for studying the effects of no sealing on St. George as compared to continued sealing operations on St. Paul. Sealing for subsistence purposes was, for all practical purposes, ended, although the Convention did allow for

> pelagic sealing [by Indians, Ainos, Aleuts, or Eskimos dwelling on the coast of the waters north of the 30th parallel] in canoes not transported by or used in connection with other vessels, and propelled entirely by oars, paddles, or sails, and manned by not more than five persons each, in the way hitherto practiced and without the use of firearms: provided that such hunters are not in the employment of other persons or under contract to deliver the skins to any person (Convention, Article VII).

Thus, in 1973, no subsistence sealing was allowed on St. George. Instead, meat was sent from the St. Paul harvest to St. George for food. Jones explains the situation as follows (1980:166):

> The issue of St. George Aleuts' subsistence rights was not clearcut. Eager to protect the purity of its research experiment, the National Marine Fisheries Service sought to avert the Aleuts' demand to engage in subsistence sealing on St. George. At the same time, the Marine Mammal Protection Act of 1972 assured aborigines subsistence rights, providing they used aboriginal methods. However, unlike the hunting of other marine mammals, seal hunting was a land-based operation: consequently, it wasn't clear that it was protected in this legislation. To further complicate the picture, the federal government was still legally responsible for the Aleuts' welfare: most of those on St. George were poor and seal meat was their main staple. Management initially resolved these disparate considerations by delivering seal meat captured at St. Paul to St. George.

The meat arrived, but was in poor condition, and the residents of St. George were not satisfied with the scheme. Over the years that followed, St. George was finally allowed a subsistence harvest on their own island, using standard (i.e., commercial-type) harvesting methods. A quota of 350 seals per year is now in effect, with 25 animals killed twice per week for seven weeks during the summer. In 1981, St. George subsistence sealing began on 7 July. During these subsistence harvests, meat is available on the killing ground generally on a first-come, first-served basis, with the portions left over being brought back to the village on a truck and made available to anyone not able to get to the harvest.

In addition to the 350 seals taken, meat for the village is obtained from St. Paul in two ways. First, containers of fresh hearts and livers are sent to St. George from the St. Paul harvest on every bimonthly charter plane during the harvest season. These are made available to all residents of the village. Second, two or three St. George men go to St. Paul during the harvest season to butcher, package, freeze, and send back that seal meat that has been ordered by St. George residents. A request list for this purpose is maintained in St. George prior to the sealing season, and people may sign up for as many specific parts of fur seals as they desire. Table 5-5 itemizes the village requests for 1930 and 1981. It must be noted that the decrease in requests for frozen hearts and livers is likely due to increased reliance on the fresh shipments of these parts discussed above. The meat sent to St. George in this way is frozen, and must be at least partially thawed in order to divide among those who had.requested it. As in St. Paul, all families use fur seal meat.

Additional discussion of the St. George moratorium and subsistence will be undertaken in Chapter 6. At this point, it will suffice to state simply that the residents of St. George are, on the whole, somewhat dissatisfied with the present manner of obtaining seal meat. The fur seal rookeries and hauling grounds on St. George are shown in Figure 5-2.

TABLE 5-5 :--Fur seal meat requested by St. George residents from St. Paul harvest

Part of fur seal	1980	1981	Change
Flippers	2680	3295	+22.9%
Shoulders	403	430	+6.7%
Ribs	45	269	+497.8%
Chests	340	332	-2.3%
Hearts	500	301	-39.8%
Livers'	500	130	-74.0%
Retiks (part of shoulder)	50	30	-40.0%
Spine	38	*	*
L e g	100	*	*
Pounds (estimated)	8500	NA	--

SOURCE: National Marine Fisheries Service

NA = Data not available

* Spines and legs were not itemized on the 1981 request list

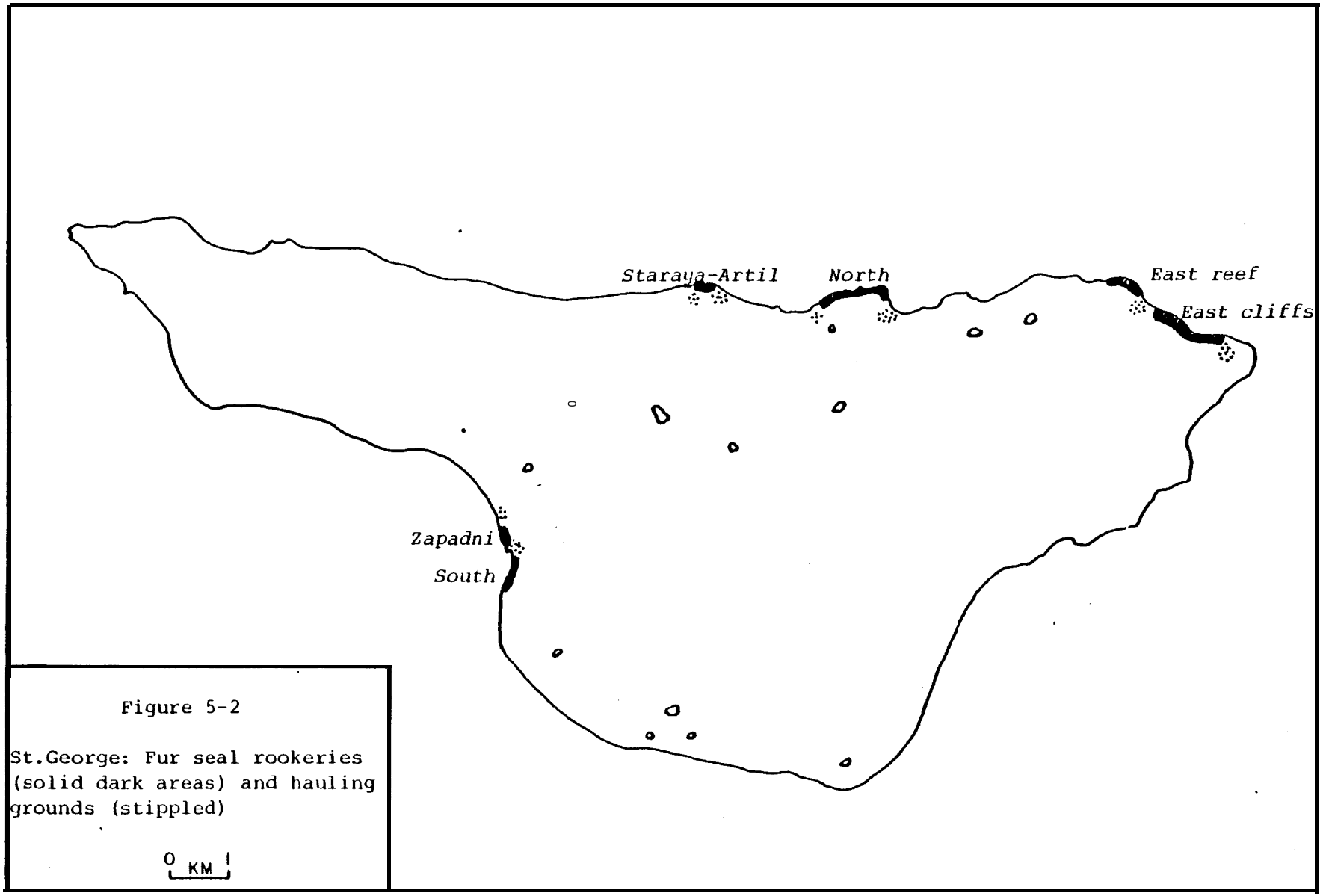

Figure 5-2

St.George: Fur seal rookeries (solid dark areas) and hauling grounds (stippled)

2. Sea lions

Sea lions have been a major resource of the Pribilof Islands, in terms both of subsistence as well as of raw material for manufacturing. Although some of these animals are around throughout the year, many arrive in the spring and early summer and depart in the fall. The earliest detailed description of sea lions and their use comes from Khlebnikov (1979:15), writing in the early 1800s, who states the following:

> The sea lions are found mostly on St. George Island, and consequently the main industry for it is there. This begins in May with small numbers of animals that then become more available in July and August. They are driven from the beach the same way as are fur seals, having been controlled in order to leave the adult males, bachelors, and females behind. The number, a composite of herds driven, sometimes ranges from 50 to 100 and up to 150 specimens: during the drives of sea lions the bachelors often resist and are let go by the people. Having been driven to the environs of the settlement, the young are killed with stones and the large animals are shot with guns; the skins are removed from them and put into piles in order to rot the hair. The skins are sometimes left in this state for a month, then cleaned and stretched on stakes during the winter for drying, after which the so-called hides are tied up into bales of 10 for storage and shipment to New Arkhangel [Sitka].
>
> The total number of sea lions 'killed on St. George runs up to a thousand and more, and on St. Paul from 300 to 400, but the young sea lions are not entered into this count: they are killed daily for food at any time of the year. Meat from those killed during the drives becomes rancid for shipment and is slightly dehydrated for use as food.

Khlebnikov also lists additional uses to which sea lions were put (1979:15): blubber, rendered into oil,

barreled, and sent to Sitka for lighting or heating; intestines, for making waterproof clothing; whiskers, for decorating hats and for shipment to Sitka for trade with the Tlingit. Later, Khlebnikov's work contains the following information (apparently hand-written by Russian-American Company chief manager Baron Ferdinand Wrangel [1830-1835]) concerning sea lions (1979:22):

> For the New Arkhangel office 500 large and average hides are necessary without fail. In Unalaska, 4 large bidars [open, sea lion skin-covered boats used by Aleuts] each require 24 hides of adult male sea lions to cover three times a year; 5 bidarkas [covered, kayak-type boats used by Aleuts] each require from 3 to 6 large or average hides. The Aleuts have these skins. It is possible to ship many more sea lion flippers from St. George Island to Unalaska for shoe soles.

Khlebnikov adds the following interesting information (1979:9):

> The fur traders are convinced that, for controlling equilibrium in swimming, sea lions swallow round stones from sea beaches for ballast. In killing sea lions, they find them in the stomachs, and the Aleuts regard the stones as some kind of lucky sign to come upon and carefully guard them for themselves. I found such a stone on the floor in one house, and out of curiosity kept it for myself.

Finally, Khlebnikov also states that Aleuts went from St. Paul to Walrus Island to hunt both walrus and sea lions for food (1979:33). Tikhmenev (1978:409), probably relying on Khlebnikov, writes in 1863 that "Sea lion hunting on St. George is becoming more difficult each year."

Elliott examines in detail the subsistence and manufacturing values of sea lions. His lengthy description of the manner in which sea lions were obtained on St. Paul is worthy of quotation, as it provides first-hand appreciation for the effort'involved in acquiring these animals (1881: 89-91):

> PREPARATIONS FOR THE DRIVE.--Along by the middle or end of September, as late sometimes as November, and after the fur-seal rookeries have broken up for the season, fifteen or twenty of the very best men in the village are selected, by one of their chiefs, for a sea-lion rendezvous at Northeast point: they go up there with their provisions, tea and sugar, and blankets, and make themselves at home in the barrabbora and houses, which I have located on the sketch-map of Novastoshnah, prepared to stay, if necessary, a month, or until they shall get the whole drove together of two or three hundred sea-lions.
>
> METHODS OF DRIVING SEA-LIONS.--The "seevitchie", as the natives call these animals, cannot be approached successfully by daylight, so these hunters lie by, in this house of Webster's, until a favorable night comes along--one in which the moon is partially obscured by drifting clouds, and the wind blows over them from the rookery where the sea-lions lie: such an opportunity being afforded, they step down to the beach at low water, and proceed to creep on all-fours over the surf-beaten sand and boulders up to the dozing herd, and between it and the high-water mark where it rests. In this way, a small body of natives, crawling along in Indian file, may pass unnoticed by the sea-lion sentries, which doubtless, in the uncertain light see, but confound, the forms of their human enemies with those of seals. When the creeping Aleuts have all reached the strip of beach that is left bare by ebb-tide, which is between the water and the unsuspecting animals, at a given signal from their crawling leader they all at once leap to their feet, shout, yell, brandishing their arms, and firing off pistols, while the astonished and terrified lions roar and flounder in all directions.
>
> BEHAVIOR OF THE SEA-LIONS WHEN SURPRISED.--If, at the moment of surprise, the brutes are sleeping with their heads pointed toward the water, they rise up in fright and charge straight on in that way directly over the men themselves, but if their heads have been

resting at this instant pointed landward, up they rise and follow that course just as desperately, and nothing will turn them either one way or the other: those sea-lions which charged for the water are lost, of course, but the natives promptly follow up the land-turned animals with a rare combination of horrible noises and demoniacal gesticulations, until the first frenzied spurt and exertions of the terrified creatures so completely exhaust them that they fall panting, gasping, prone upon the earth, extended in spite of their huge bulk and powerful muscles, helpless, and at the mercy of their cunning captors: who, however, instead of slaying them as they lie, rudely rouse them up again, and urge the herd along to the house, in which they have been keeping this watch during the several days past.

THE "CORRAL".--Here, at this point, is a curious stage in the proceedings. The natives drive up to that "Webster's" house the 25 or 30 or 40 sea-lions, as the case may be, which they have just captured—they seldom get more at any one time-and keep them in a corral or pen right by the barrabbora, on the flattened surface of a sandridge, in the following comical manner: when they have huddled up the "pod", they thrust stakes down around it at intervals of 10 to 30 feet, to which strips of cotton cloth are fluttering as flags, and a line or two of sinew-rope, or thong of hide, is strung from pole to pole around the group, making a circular cage, as it were; within this flimsy circuit the stupid sea-lions are securely imprisoned; and though they are incessantly watched by two or three men, the whole period of caging and penning which I observed, extending over nine or ten days and nights, passed without a single effort being made by the "seevitchie" to break out of their flimsy bonds: and it was passed by these animals not in stupid quiescence, but in alert watchfulness: writhing, twisting, turning one upon and over the other.

By this method of procedure, after the lapse usually of two or three weeks, a succession of favorable nights will have occurred; and the natives secure their full quota, which, as I have said before, is expressed by a herd of two or three hundred of these animals.

PREPARATION AND METHOD OF DRIVING TO THE VILLAGE.--The complement filled, the natives prepare to drive their herd back to the village, over the grassy and. mossy uplands and intervening stretches of sand-dune tracts, fully eleven miles, preferring to take the

trouble of prodding the clumsy brutes, wayward and obstinate as they are, rather than to pack their heavy hides in and out of boats: making, in this way, each sea-lion carry its own skin and blubber down to the doors of their houses in the village. If the weather is normally wet and cold, this drive, or caravan of sea-lions, can be driven to the point of destination in five or six days: but, should it be dry and warmer than usual, three weeks, and even longer, will elapse before the circuit is traversed.

When the drive is started the natives gather around the herd on all sides, save the opening which they leave pointing in the direction in which they desire the animals to travel; and, in this manner they escort and urge the "seevitchie" on to their final resting and slaughter near the village. The young lions and the females being much lighter than the males, less laden with fat or blubber, take the lead; for they travel twice and thrice as easy and as fast as the old males; which, by reason of their immense avoirdupois, are incapable of moving ahead more than a few rods at a time, when they are completely checked by sheer loss of breath, though the vanguard of the females allures them strongly on: but, when an old sea-lion feels his wind coming short, he is sure to stop, sullenly and surlily turning upon the drivers, not to move again until his lungs are clear.

In this method and manner of conduction the natives stretch the herd out in extended file, or, as a caravan, over the line of march, and, as the old bulls pause to savagely survey the field and catch their breath, showing their wicked teeth, the drivers have to exercise'every art. and all their ingenuity in arousing them to fresh efforts. This they do by clapping boards and bones together, firing fusees, and waving flags; and, of late, and best of all, the blue gingham umbrella repeatedly opened and closed in the face of an old bull has been a more effective starter than all the other known artifices or savage expedients of the natives.

ARRIVAL OF THE DRIVE AT THE VILLAGE.--The procession of sea-lions managed in this strange manner day and night—for the natives never let up-is finally brought to rest within a stone's throw of the village, which has pleasurably anticipated, for days, and for weeks, its arrival, and rejoices in its appearance. The men get out their old rifles and large sea-lion lances, and sharpen their knives, while the women look well to their oil-pouches, and repair to the field of slaughter with meat-baskets on their heads.

> MANNER IN WHICH THE KILLING IS CONDUCTED.--No attempt is made, even by the boldest Aleut, to destroy an old bull sea-lion by spearing the enraged and powerful beast, which, now familiar with man and conscious as it were of his puny strength, would seize the lance between his jaws and shake it from the hands of the stoutest one in a moment. Recourse is had to the rifle. The herd is started up the sloping flanks of the Black Bluff hillside: the females hang behind. Then the marksmen, walking up to within a few paces of each animal, deliberately draw their sights upon their heads and shoot them just between the eye and the ear. The old males thus destroyed, the cows and females are in turn surrounded by the natives, who, dropping their rifles, thrust the heavy iron lances intd their trembling bodies at a point behind the fore-flippers, touching the heart with a single lunge.

The uses of sea lions which Khlebnikov described were largely identical to those which Elliott witnessed a half century later. Elliott states (1881:91):

> [The sea lion] supplies [the Aleuts] with its hide, moustaches, flesh, fat, sinews, and intestines, which they make up into as many necessary garment&, dishes, etc. They have abundant reason to treasure its skin highly, for it is the covering to their neat bidarkies and bidarrahs, the former being the small kyak of Bering Sea, while the latter is a boat of all work, exploration, and transportation. These skins are unhaired by sweating in a pile: then they are deftly sewed and carefully stretched over a light keel and frame of wood, making a perfectly water-tight boat that will stand, uninjured, the softening influence of water for'a day or two- at a time, if properly air-dried and oiled. After being used during the day, these skin boats are always drawn out on the beach, turned bottom-side up and air-dried during the night: in this way made ready for employment again on the morrow.

He adds that the intestines are dried and cut into strips, which are sewn- into waterproof garments. The throats are dried and utilized for "boot tops, which are in turn soled

by the tough skin that composes the palms of this animal's fore-flippers" (1881:92). The stomachs were dried and used as oil containers, and the whiskers were traded to the Chinese, who put them to various uses.

Again, Elliott's description of the butchering and use of an old male sea lion by an Aleut woman is valuable in its entirety (1881:91-92n):

> She first removed the skin, being actively aided in this operation by an uncouth boy: she then cut off the palms of both fore-flippers: the boy at the same time pulled out the moustache bristles: she then cut out its gullet, from the glottis to its junction with the stomach, carefully divested it of all fleshy attachments, and fat; she then cut out the stomach itself, and turned it inside out, carelessly scraping the gastric walls free of copious biliary secretions, the inevitable bunch of ascaris; she then told the boy to take hold of the duodenum end of the small intestine, and as he walked away with it she rapidly cleared it of its attachments, so that it was thus uncoiled to its full length of at least 60 feet; then she severed it, and then it was recoiled by the "melchiska", and laid up with the other members just removed, except the skin, which she had nothing more to do with. She then cut out the liver and ate several large pieces of that workhouse of the blood before dropping it into the meat-pouch. She then raked up several handfuls of the "leaf-lard", or hard, white fat that is found in moderate quantity around the viscera of all these pinnipeds, which she also dumped into the flesh-bag: she then drew her knife through the large heart, but did not touch it otherwise, looking at it intently, however, as it still quivered in unison with the warm flesh of the whole carcass. She and the boy then poked their fingers into the tumid lobes of the immense lungs, cutting out portions of them only, which were also put into the grimy pouch aforesaid: then she secured the gall-bladder and slipped it into a small yeast-powder tin, which was produced by the urchin: then she finished her economical dissection by cutting the sinews out of the back in unbroken bulk from the cervical vertebra to the sacram; all these were stuffed into that

> skin bag, which she threw on her back and supported it by a band over her head: she then trudged back to the barrabkie from whence she sallied a short hour ago . . .; she made the following disposition of its contents: The palms were used to sole a pair of tarbosars, or native boots, of which, the uppers and knee tops were made of gullets--one sea-lion gullet to each boot top; the stomach was carefully blown up, and left to dry on the barrabkie roof, eventually to be filled with oil rendered from sea-lion or fur-seal blubber. The small intestine was carefully injected with water and cleansed, then distended with air, and pegged out between two stakes, 60 feet apart, with little cross-slats here and there between to keep it clear of the ground. When it is thoroughly dry, it is ripped up in a straight line with its length and pressed out into a broad band of parchment gut, which she cuts up and uses in making a waterproof "kamlaikie", sewing it with those sinews taken from the back. The liver, leaf-lard, and lobes of the lungs were eaten without further cooking, and the little gall-bag was for some use in poulticing a scrofulous sore. The moustache-bristles were a venture of the boy, who gathers all that he can, then sends them to San Francisco, where they find a ready sale to the Chinese, who pay about one cent apiece for them. When the natives cut up a sea-lion carcass, or one of a fur-seal, on the killing-grounds for meat, they take only the hams and loins. Later *in* the season they eat the entire carcass, which they hang up by the hind-flippers on a "laabas" by their houses.

Osgood et al. certainly witnessed a drastically reduced take of sea lions during their trip to the Pribilofs in 1914 than had Elliott some 40 years earlier. They present a summary of the number of sea lions killed on St. Paul from 1870 to 1909; their data are included in Table 5-6. The killing evidenced in Table 5-6 was for more than subsistence utilization, and, from a sea lion population basis, could not be sustained further: ". . . the number [of sea lions] had [by 1909] become so reduced as to lead the

TABLE S-6:--Sea lions killed on St. Paul, 1870-1909

Year	Number Killed	Remarks
1870	123	
1871	---	No record.kept
1872	200	
1873	290	Driven from Northeast Point
1874	506	Includes about 300 driven from Northeast Point
1875	402	Includes 340 driven from Northeast Point
1876	292	Includes 188 driven from Northeast Point
1877	38	Most killed at Northeast Point
1878	300	Driven from Northeast Point
1879	195	Driven from Northeast Point
1880	66	Killed at Northeast Point
1881	287	20 killed on Walrus Island: remained driven from Northeast Point
1882	214	Includes 100 driven from Northeast Point
1883	139	Killed at Northeast Point
1884	253	Killed at Northeast Point
1885	30	Killed at Northeast Point
1886	356	Includes 190 driven from Northeast Point
1887	138	Killed at Northeast Point
1888	30	Killed at Northeast Point
1889	30	Killed at Northeast Point
1890	41	Killed at Northeast Point
1891	---	Only a few, mainly pups, killed for food
1892	50	Approximate number: mainly pups
1893	35	Approximate number
1894	96	
1895	17	Bulls
1896	25	
1897	22	
1898	33	Bulls
1899-1909	---	Only a few per year

SOURCE: Osgood et al. (1915:120-121)

[government] agent to believe that it would be advisable not to kill any more for several years" (Osgood et al. 1915:121). This decline in the number of sea lions probably limited the degree to which they could be used for subsistence purposes, rather than, as the following statement by Osgood et al. leads one to suspect, Aleuts were losing their taste for such food (1915:119):

> [W]ith the growing tendency of the inhabitants to adopt imported food and clothing, the importance of the animal has dwindled until practically its only economic use is found in the manufacture of the huge bidarras. The adoption of modern methods of managing the business of the islands will undoubtedly demand the discarding of these boats as a means of landing cargo, and with them will vanish the importance of the sea lion as an economic factor.

It is interesting to note that Osgood et al. were incorrect on both counts: baidars are still used to lighter freight in the Pribilofs (although the boats are now covered with canvas instead of sea lion skins), and sea lions nevertheless are very much an important subsistence item in both communities.

Today, sea lions occur in the Pribilof Islands in moderate numbers, with most being. on Walrus Island. Table 5-7 enumerates the sea lions of the Pribilofs and Aleutians. Hunt (1976:92) counted between 1562 and 1684 sea lions on Walrus Island during a brief aerial survey.

TABLE 5-7:--Steller sea lions in the Aleutian and Pribilof Islands

Location	Estimated Population
Aleutian Islands	100,200
St. Paul Island and Sea Lion Rock	300
Otter Island	160
Walrus Island	4,500
St. George Island	1,200
Total	106,360

SOURCE: Kenyon and Rice (1961); Kenyon (1962)

St. Paul. Sea lions are hunted on St. Paul today mainly around Northeast Point and Reef Point, although additional hunting locations are at and north of Halfway Point, near Zapadni Point on the west side of English Bay, at Southwest Point, and at Whale Point and Lukanin Point on the east side of Lukanin Hill (Figure 5-3).

Hunting begins in some locations in September, depending on the departure of the fur seals from their rookeries and hauling grounds, and the hunting season continues through May. Early in the season, hunters may lock for sea lions on land near the rookeries; but throughout most of the hunting season, sea lions are obtained in the water by hunters along- the shore.

Choice of hunting location is dependent largely on two factors. First, winds and currents are taken into account. Since the animals are shot in the sea, it is necessary for the combined forces of wind and current to bring the animal close enough to shore for the hunter to retrieve. Onshore winds, therefore, are the ideal, and with westerly winds, for example, hunters will likely choose hunting locations on the west side of Reef Point or on the *west* side of Northeast Point.

The second factor affecting choice of hunting location is transportation. While Northeast Point appears to

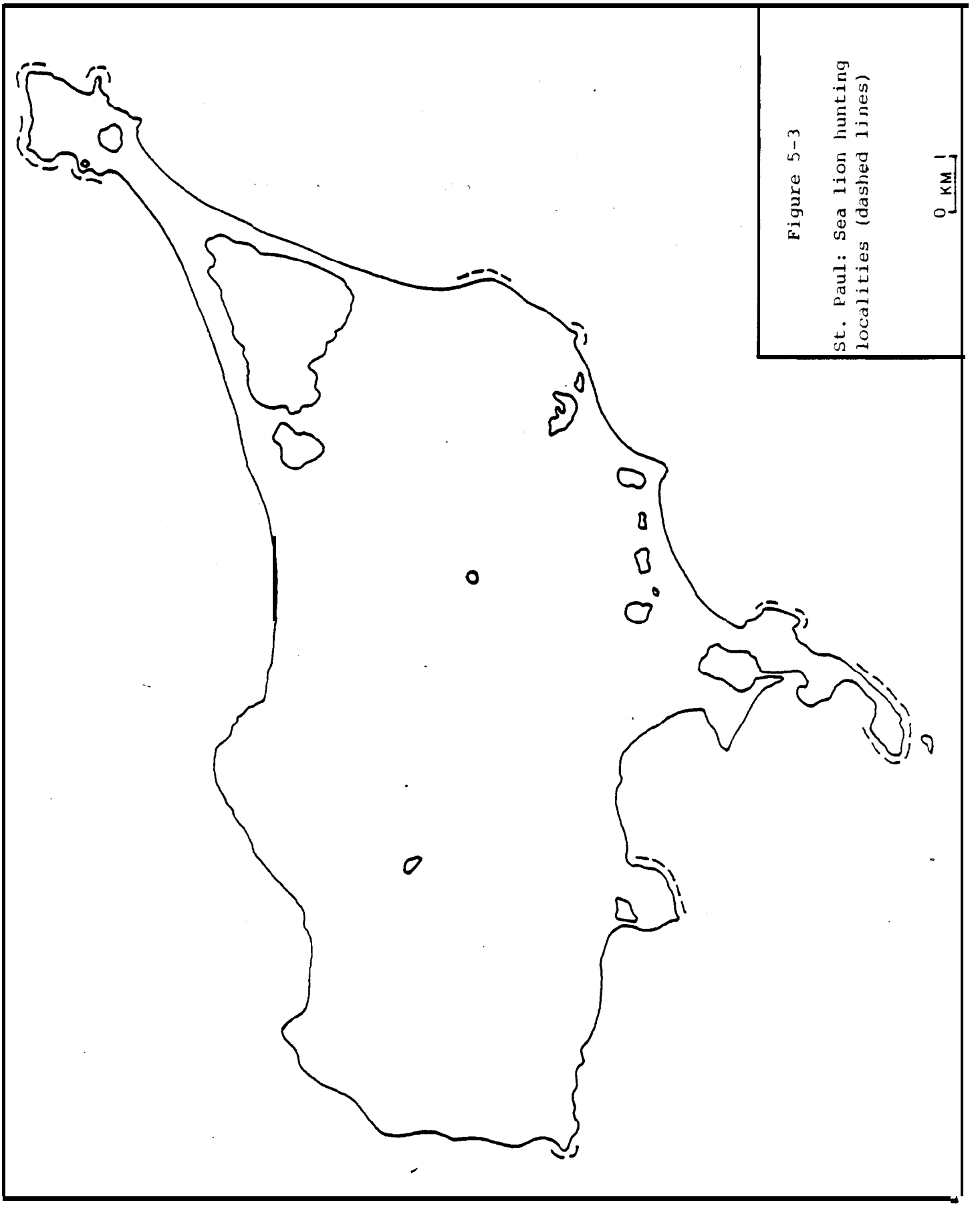
Figure 5-3
St. Paul: Sea lion hunting localities (dashed lines)
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be the overall favorite sea lion hunting location, those hunters who do not possess, or have access to, the necessary transportation to get there must depend on the Reef Point area instead, which is within easy walking distance-of the village. Northeast Point, however, is sometimes impossible for anyone to reach, since blowing snow often makes the road there difficult to travel.

Sea lion hunting may be a lone endeavor, although on many hunts small groups of men go together. Though some particular locations are considered to be the best hunting spots, there is no ownership of these, and access to them is on a first-come basis. Hunters stand or sit along the shore or cliff edge, waiting for a sea lion to swim by. When one is sighted, the hunters poise themselves for the shot as the animal submerges and fire when it comes to the surface. If a strike has been made, they must wait until the sea lion drifts close enough to shore to use their "sea dog," a wooden device with three or four large fishhooks attached. The sea dog is thrown past the sea lion and pulled back to shore, catching one of its hooks in the animal. Other near-by hunters, alerted to the kill, assist in looking for and later hauling in the sea lion.

Many hours may be spent by sea lion hunters waiting to sight an animal, and waiting for a wounded sea lion to drift close to shore can take additional hours. On some

occasions, sea lion hunting is combined with duck hunting, as the hunting locations for ducks and sea lions are largely the same.

On those occasionswhen a sea lion does not drift within sea dog range by the end of the day, hunters will often go out the next morning to see if the body has come ashore. The meat is considered to be edible if found soon the day 'after the hunt.

When a sea lion is brought to shore, it is skinned, and butchered quickly, especially if the temperature is very cold. The hunter who shot the animal keeps the choicest parts, which vary among hunters. If other hunters are on hand-, they are given meat: if there are no others, or if there-is an abundance of meat, a CB radio call to the village will invite interested persons to partake. A hunter will often divide his meat upon returning to the village and share portions with friends and family. Sharing is generally reciprocal, and some older people who can not hunt may give a box of ammunition to a younger hunter in exchange for a gift of meat. Reciprocity is not required, and needy individuals are always provided for. Besides meat, sea lion blubber is used by some families to make oil. Such oil is eaten with other foods.

In addition to the hunting implements mentioned above, Table 5-8 itemizes other necessary and optional hunting equipment. While sea lion hunting can be a laborious, time-consuminq enterprise, it is not an especially costly one, as Table 5-8 indicates.

The approximate number of sea lions killed and retrieved during the 1980-81 hunting season in St. Paul was estimated as being about 35. Underscoring the fact that sea lion hunting is difficult is the further evidence that an additional 35-50 sea lions may have been shot, but lost. Sea lion hunting is a subsistence activity of major importance to the people of St. Paul. On one beautiful day in March, 1981, it. was reported that the shops in St. Paul "were closed down for hunting" and that "the cliffs were lined with people."

St. George. On St. George, sea lions are hunted along a number of stretches of shoreline cliffs, including the eastern half of the north shore of the island, the Zapadni Bay coast, and southeast of Dalnoi Point. In the past, sea lion were very numerous just east of Garden Cove (Figure 5-4).

Virtually all aspects of sea lion hunting on St. George are identical to those on St. Paul. On St. George, more sea lion hunting takes place by boat than on St. Paul, a

TABLE 5-8: --Total cost and yearly cost of sea lion hunting per hunter .

Item	cost	Useful Life (yrs)	Cost Per Year
Necessary			
Rifle	$300	c. 10	$30
Ammunition	$140	1	$140
Sea dog	NEG	--	NEG
Butchering tools	NEG	--	NEG
Long line for hoisting	NEG	--	NEG
Pack sacks for transporting meat	NEG	--	NEG
Optional			
3-wheeler vehicle	NC	NC	NC
Snowmachine	NC	NC	NC
Car/truck	NC	NC	NC
Skiff + motor	NC	NC	NC
First year cost	$440	--	--
Total cost per year	--	--	$170

NOTE: All figures approximate, depending on product brand, shipping route to the Pribilofs, and other factors.

NEG = Negligible

NC = Not calculated, since primary use of item is not for sea lion hunting.

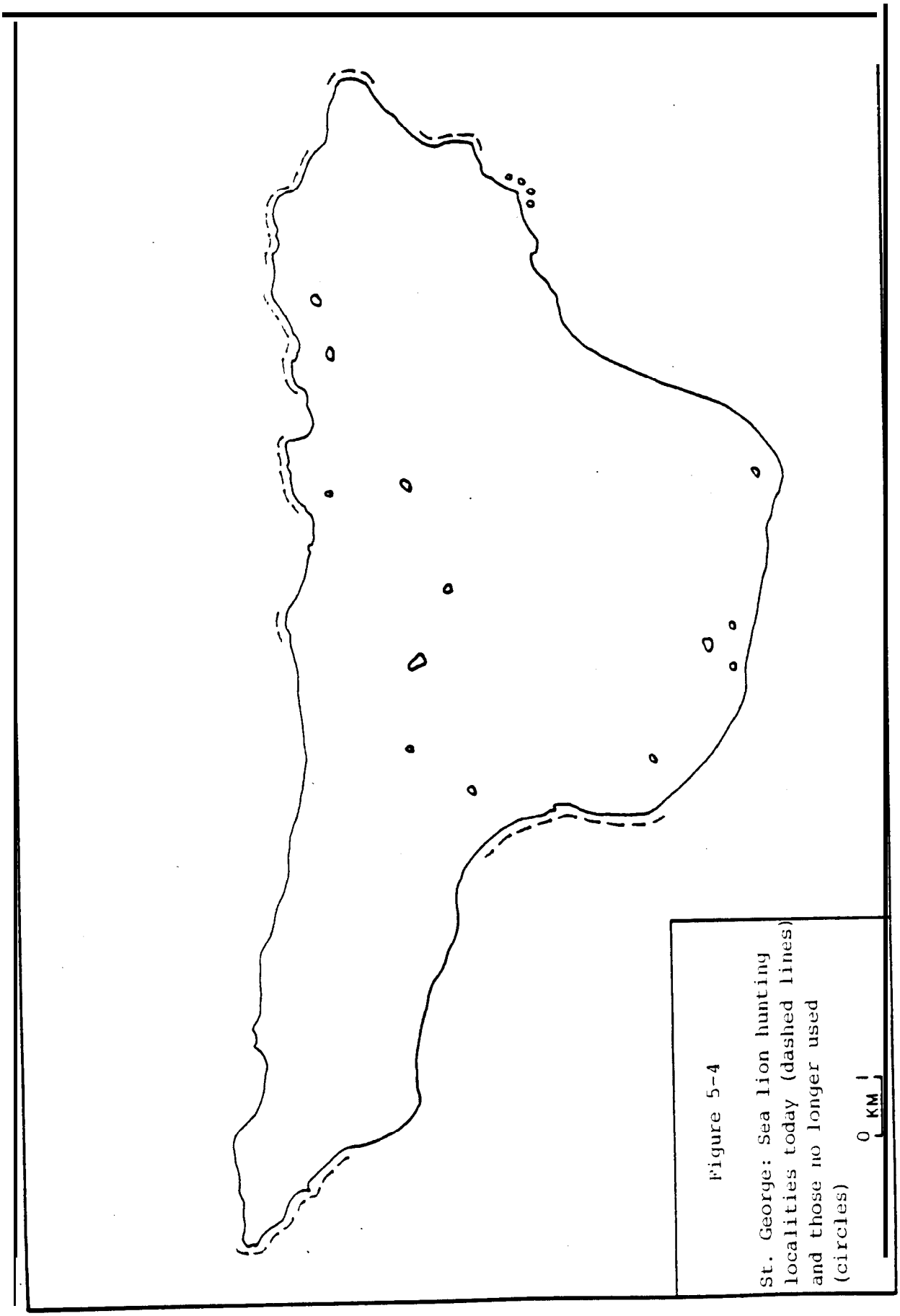

Figure 5-4

St. George: Sea lion hunting localities today (dashed lines) and those no longer used (circles)

situation at least partially due to the limited road system on St. George; most hunting, however, takes place from shore.

The 1980-81 hunting season was considered by many residents of St. George to have been poor for sea lion, with about 10-20 animals taken. Normally, 35-40 sea lions would be killed. It was estimated that more are lost than retrieved, and beaches generally are not checked the next day for sea lions that might have washed ashore overnight since the meat of such animals is considered to be too old. Again, the limited road system might make it difficult to get back to a hunting location to check for sea lions washed ashore the following day.

As on St. Paul, sea lion meat and blubber are utilized, the latter by some families to make oil. One St. George resident still possesses sea lion oil ointment made 40 years ago for medicinal use.

3. Hair seals

Hair seals are found in low numbers around both St. Paul and St. George and are only very occasionally used as food. Elliott (1881:75) reports a century ago that "the natives say that the meat of the hair-seal . . . is superior to [sea- lion or fur seal]." This is certainly not the case today, although it is said that some Aleuts who have moved to the Pribilofs from the Aleutian Islands, where hair seal is very common, do favor hair seal over other sea mammals. As was reported for the fur seal, the meat and various organs (e.g., heart and liver) are eaten.

St. Paul. Although very few hair seals are hunted today on St. Paul, they may be found on the south coast of the island west of the village, around North Point, and near Tonki Point (Figure 5-5). They are generally hunted today only when other sea mammals are scarce. Some people prefer hair seal oil to that of sea lion or fur seal.

St. George. As on St. Paul, very few hair seal are hunted on St. George. In the past, they were hunted near Garden Cove, and today they may be hunted at Zapadni Bay, along the north shore of the island toward Dalnoi Point, along the coast near the village, at Tolstoi Point, and around Sealion Point (Figure 5-6). Two informants who enjoy hair seal mentioned that the meat may be dried-for future use. Hair seal oil is also used by some families.

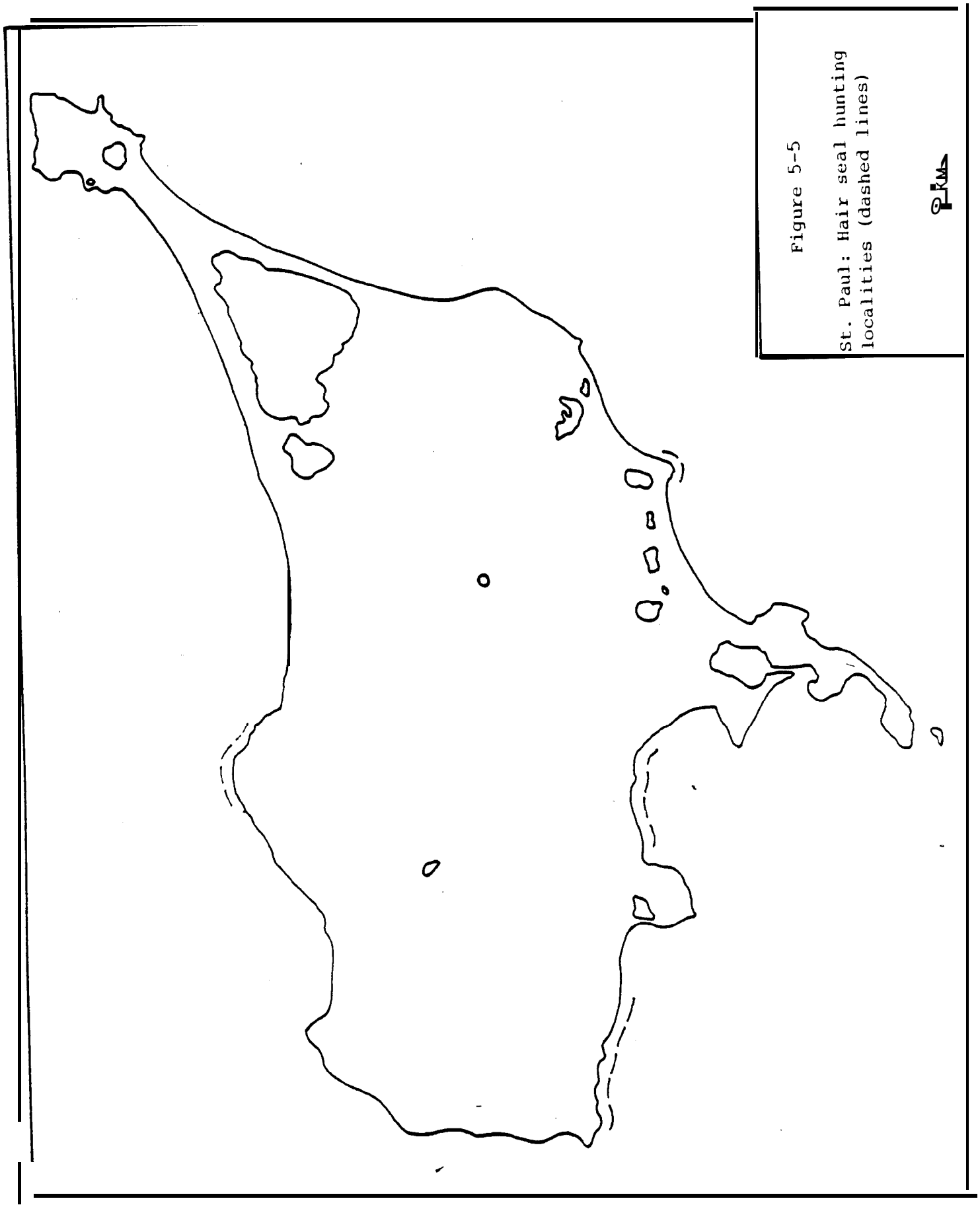

Figure 5-5

St. Paul: Hair seal hunting localities (dashed lines)

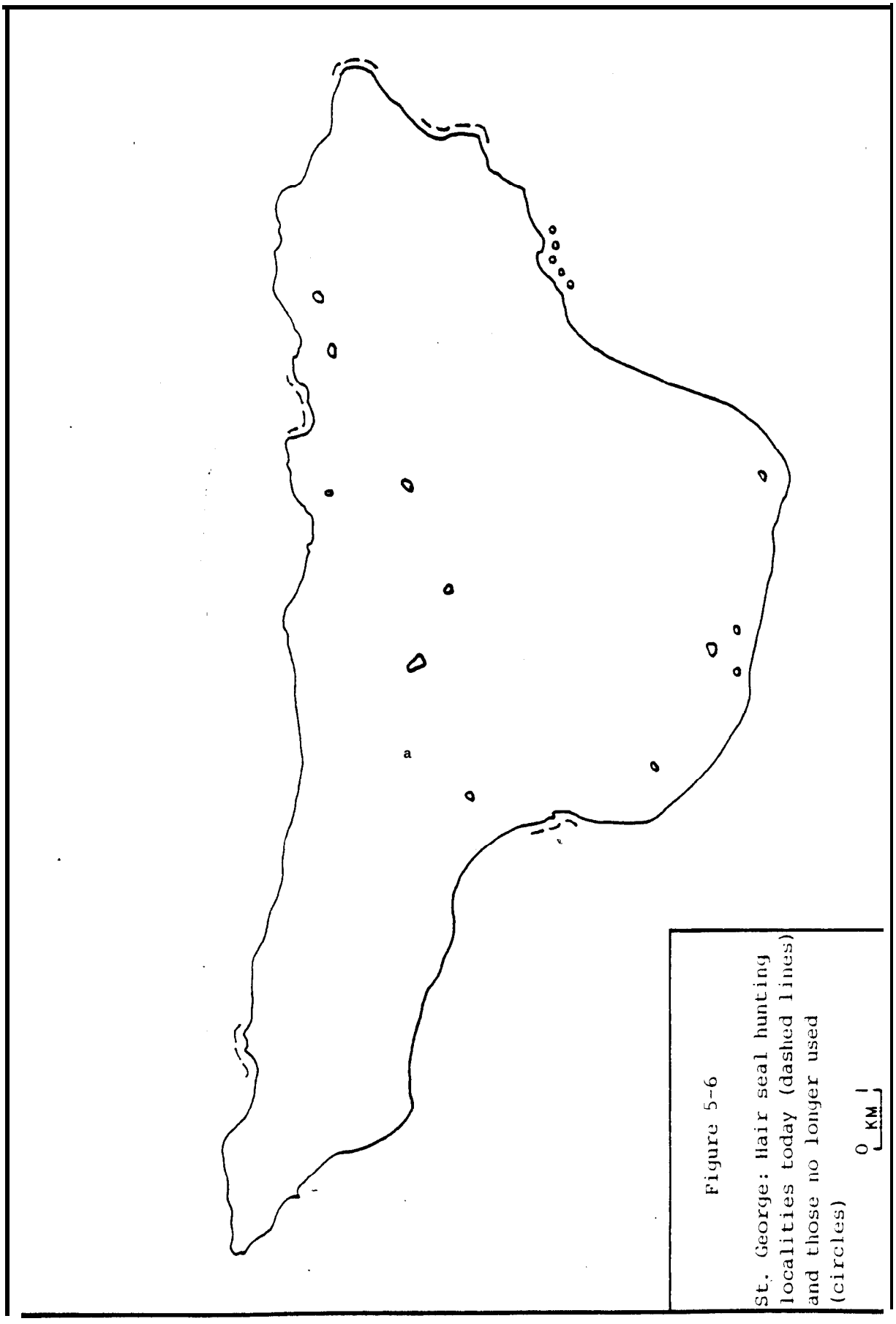

Figure 5-6

St. George: Hair seal hunting localities today (dashed lines) and those no longer used (circles)

4. Walrus and whales

Neither walrus nor whales have ever been an important subsistent resource to Aleuts of the Pribilof Islands, although in the early days of occupation of the islands walrus were quite numerous on St. Paul Island and Walrus Island and less so on St. George Island. Walrus tusks provided important income for the Russian-American Company: "In the mid-1810s the company procured over 7200 pounds of walrus ivory annually on the Pribilofs alone" (Gibson 1976:36), although in earlier years even more was obtained (see Elliott 1881:93n). By Elliott's time (1870s), however, only a few of these animals could be found on Walrus Island (1881:93).

Whales occasionally wash ashore on both St. Paul and St. George, and from time to time their meat, blubber, and bones were used (Preble and McAtee 1923:115; True 1899). In the summer of 1981, a large finback whale washed ashore on St. Paul, and several residents considered utilizing it. While they did not do so, their discussions concerning the whale indicated that salvaging meat had taken place within living memory.

5. Reindeer

Reindeer were introduced to the Pribilof Islands in 1911, when 21 does and 4 bucks were landed on St. Paul in August and 12 does and 3 bucks on St. George in September. Within the first several years, the herds on the islands increased to more than 150 each (Osgood et al. 1915:117). While these introductions were "primarily for the benefit of the natives, they [took] practically no interest in the animals" (Osgood et al. 1915:118), and the reindeer were seen, instead, to hold potential value as a source of fresh meat for non-Aleut Government employees on the islands.

The St. George herd reached a maximum size of about 200 in 1922, but experienced a gradual decline since that time. The St. Paul herd grew to more than 1900 by 1938, but severe winters in 1939-1940 and 1945-1956 resulted in substantial decline in the reindeer population on both islands (U.S. Department of the Interior 1952:59). By 1947, St. Paul's herd was down to about 250 animals, and that of St. George to 20 animals (U.S. Department of the Interior 1950:71). Apparently, such declines were due primarily from natural causes, such as severe winters and falls over cliffs. By 1948, St. George had lost all of its reindeer, while those on St. Paul were drastically reduced in number. In 1952, reindeer were brought to St. Paul from Nunivak Island to augment the herd (Foote et al. 1968:17).

St. Paul. A herd of approximately 400 reindeer now occupies the island of St. Paul. During the summer months, the herd is usually found in the hills of the western and central portion of the island, although its yearly range includes almost the entire island, with the exception of the area to the northeast of the southwest shore of Big Lake (Figure 5-7). On rare occasions, reindeer have been known to venture within a short distance of the village.

During the winter of 1980-81, the Tanadgusix Corporation maintained a record of the reindeer taken by means of a formal permit system. Prior to that season, an informal permit system was utilized. In 1980-81, hunters were required to obtain (at no cost) a permit which allowed the killing of one animal. Conditions for granting the permits are contained in Figure 5-8. Of the 87 permits issued, 23 kill reports were returned. According to Tanadgusix Corporation estimates, however, it is likely that nearly all of the hunters issued permits did, in fact, obtain reindeer but some failed to report their kill.

On the basis of the 23 kill reports, the following information was obtained: The 23 reports comprise information on kills by 21 different individuals. The kills occurred at several different locations around the island, with the first reported on 5 September and the last on 11 January. The hunters' estimated size of the herd was just

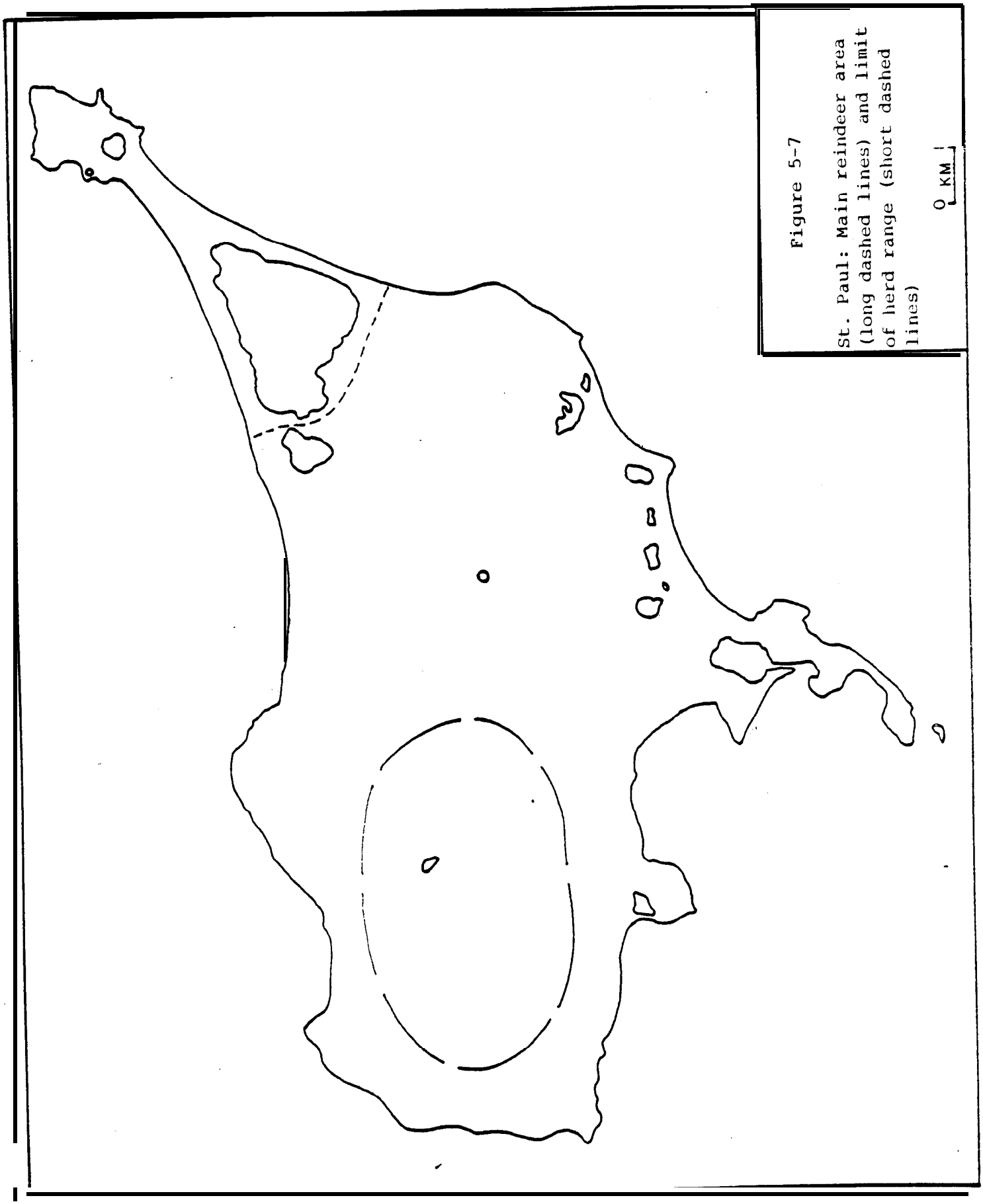

Figure 5-7

St. Paul: Main reindeer area (long dashed lines) and limit of herd range (short dashed lines)

LISTED BELOW ARE THE OBLIGATIONS OF THE HUNTER:

1. To take as much of the carcass of the slain animal as possible.

2. To take only one deer per permit, or as specified in the permit.

3. To report slain deer within 2 days to the Tanadgusix office.

4. To absolutely avoid wild herd shooting. (You could lose your privilege of hunting reindeer in the future if you are caught doing this.)

5. Select your animal carefully.

6. You must use the rifle that is listed in this application.

7. You must keep your vehicle off the tundra when hunting.

8. Any reindeer shot and wounded must be tracked down and killed. If this is not possible, the wounded deer Must be reported to the Tanadgusix office.

I have read the Regulations for hunting reindeer in 1980 and will comply.

_____

Figure 5-8:--Application for reindeer hunting permit on St. Paul. (Copied from application supplied by the Tanadgusix Corporation, St. Paul.)

over 300, though estimates ranged from 150 to 500. Lower estimates could, of course, indicate that the herd was split into a number of groups, not an uncommon occurrence. Thirteen female and 9 male reindeer were killed, with average estimated age of 2.0 and 3.1 years, respectively. The most popular caliber rifle utilized was a .30-06 (30.4%), although .270, .308 Savage, .243, 7mm Magnum, and several other calibers were also used.

Reindeer hunting on St. Paul is sometimes done by a group of men who travel to different parts of the island in search of the animals. Some men try to drive the animals towards others who actually do the killing. The reindeer are kept as calm as possible prior to killing to insure good quality meat, and prior to shooting, each hunter will pick a reindeer to shoot at so that each man may get his own. In addition to the rifles described above, CB's, vehicles (trucks or 3-wheelers), butchering knives, and ropes for dragging the animal are necessary items of equipment.

St. George. In 1980, reindeer were brought from Umnak Island in the Aleutians to St. George. Ten animals survived both the voyage and the winter of 1980-81, and five or six new calves were born to the small herd during the spring. No hunting of this herd will take place for many years.

6. Halibut, cod, and other fish

Fishing has always been of major importance to the subsistence of Pribilof Aleuts. While salmon and other anadromous fish are absent from these islands, an abundance of halibut and, to a lesser extent, cod is found in the waters of this area.

Elliott (1881:136) describes halibut fishing in the 1870s as follows:

> [The Aleuts] fish in small, "one hole" bidarkies: they venture together in squads of four to six: one man alone in the kyack is not able to secure a "bolshoi poltoos" [halibut]; the method, when the halibut is hooked, is to call for your nearest neighbor in his bidarka, who paddles swiftly up; you extend your paddle to him, retaining your own hold, and he grasps it, then you seize his in turn, thus, making it impossible to capsize, while the large and powerfully struggling fish is brought to the surface between the canoes, and knocked on the head; it is then towed ashore and carried, in triumph, to the lucky captor's house.

It is noteworthy that fishing from Aleut bidarkas lasted at least until 1876, but that by the time Osgood et al. observed fishing in St. Paul and St. George in 1914, they were able to state that "they have now entirely abandoned the use of this craft, in the management of which their ancestors were so proficient, and now fish only from large rowboats" (1915:125).

Osgood et al. also reported that "the aggregate food value of [fish] has been very great" (1915:125), indicating

that both halibut and cod were taken in large numbers and that sculpin were also caught on both islands. "Because of the weather conditions it follows that most of the fishing is done in the summer, but it can be successfully conducted in some seasons as late as the last of October, and in some cases even into December" (Osgood et al. 1915:125).

St. Paul., Elliott (1881: 14) writes that fishermen from St. Paul obtained halibut within several miles of Reef Point and along the south shore in July and August. Osgood et al. (1915:125) states that "The place usually resorted to by the people of St. Paul is a mile or two off East Landing where both cod and halibut are taken." Today, the most popular halibut fishing locations are to the east of East Landing and several areas adjacent to and out from the south shore of the island (Figure 5-9). Cod are relatively infrequently caught on St. Paul and are incidental to halibut.

Selection of a fishing location depends on currents, tides, and weather factors. In addition, concentrations of halibut vary throughout the season among the different fishing locations, and this is also taken into account.

An interesting ‘aspect of halibut fishing today is the continuing need, as Elliott described above, of cooperation. Virtually all fishing in St. Paul is done by two men working together in a boat, usually a 16-foot aluminum skiff. These

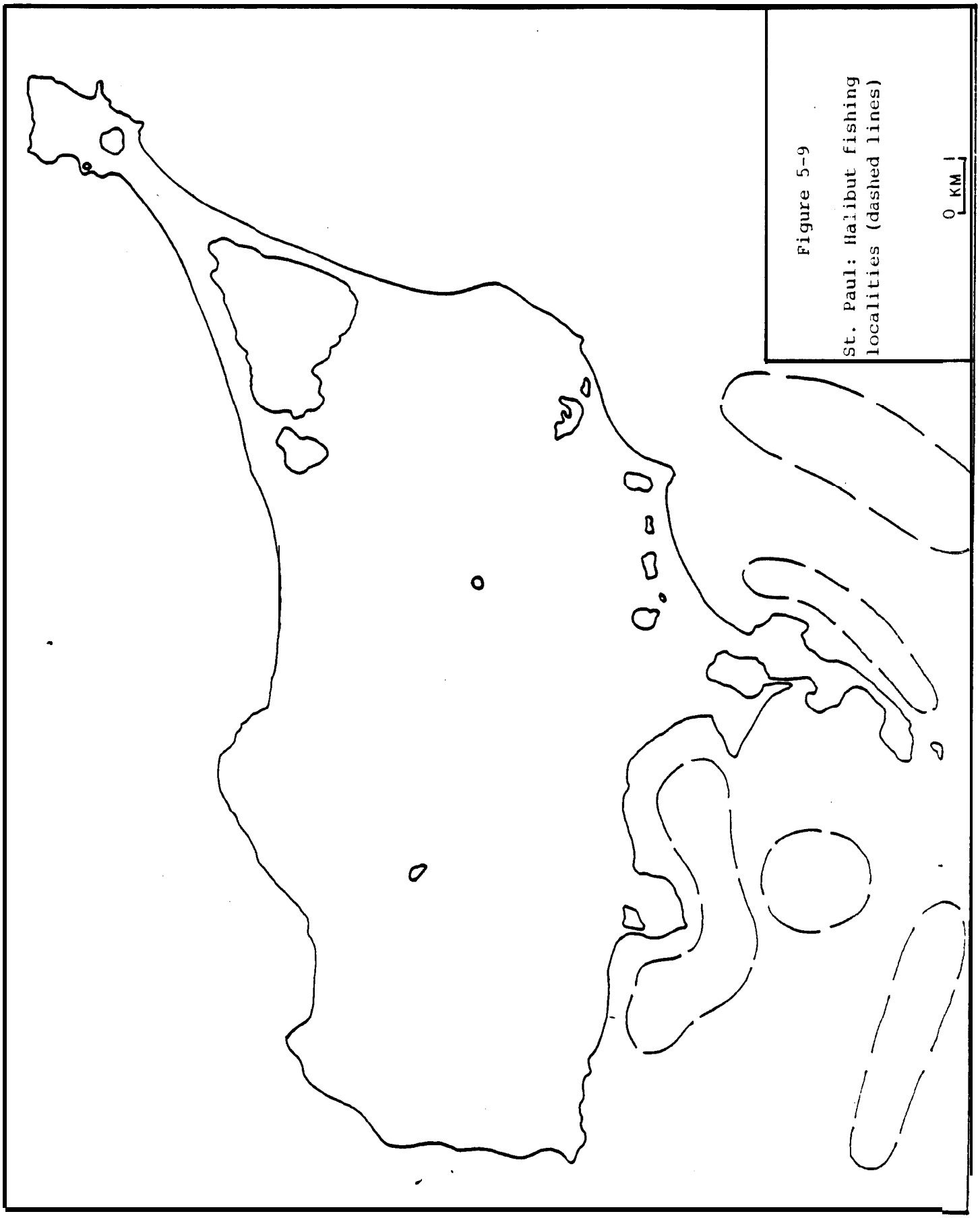
Figure 5-9
St. Paul: Halibut fishing localities (dashed lines)
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fishing partnerships are relatively stable and are based, it appears, on a variety of factors--family, friendship, need. It is often the case that one member of a partnership possesses the necessary boat and motor, while the other member owns neither, although in some instances equipment is jointly owned and/or pooled by the partners. Partners must be able to depend on one another for fishing success and safety, since a large halibut often can present a difficult and dangerous situation to fishermen in a small, lightweight skiff. A man may fish with someone other than his partner on those occasions when the partner is not able to go. There are currently approximately 50 skiffs in St. Paul, and on a calm night it is not uncommon to see at least 10-15 skiffs in the water fishing.

In 1981, the St. Paul Tanadgusix Corporation, in cooperation with the authors, conducted a survey of households to gather information on a number of issues regarding halibut. A copy of the survey form is contained in Figure S-10. Results of the survey, which was returned by 26 households, include a slight increase in the number of halibut caught per family (from 19.0 to 20.5) from 1978 to 1979. Also, at least approximately 50% of the households reported <u>both</u> giving halibut to <u>and</u> receiving halibut from other households, indicating the strongreciprocal nature of subsistence sharing in the Pribilofs. Over 80% of the households surveyed reported that they shared halibut with others.

TANADGUSIX CORPORATION
Seeking A Better Tomorrow

St. Paul Island, Alaska 99660
Phone (907) 546-8001

TANADGUSIX CORPORATION
SURVEY QUESTIONNAIRE

The Tanadgusix Corporation, in cooperation with the State of Alaska, is asking the head of the household to fill in this survey questionnaire. This survey will be used by TDX to submit information to the International Halibut Commission to show the importance of halibut to our people. If this is not done, we may face the danger of limiting or elimination of our subsistence use of halibut if Limited Entry is established for halibut in the future.

1. How many peopio are in your household? _____
2. How many people in your household fish for halibut? _____
3. How many halibut did they catch in total (1980)? _____
4. Did you share any halibut with other households? YES NO
5. About how many? _____
6. Did your household receive halibut from another household YES NO
7. About how many? _____
8. Do you feel your household got enough halibut for the year? YES NO
9. If not, how many halibut could you have used above what you did get last year? _____
10. If you can recall the number of halibut caught for your household in the years listed below, please write in the number of halibut:

YEAR	NUMBER OF HALIBUT CAUGHT
1979	_____
1978	_____

PLEASE RETURN THIS SURVEY BY JANUARY 23!!

Figure 5-10:--Tanadgusix Corporation halibut survey questionnaire.

St. George. Elliott (1881:136) reports that "The St. George natives have caught codfish just off the Tolstoi head early in June, but it is a rare occurrence." Osgood et al. (1915:125) states that "Off St. George there are two principal fishing banks, one about 3 miles to the eastward of the village landing, and about half a mile from shore where only cod are taken: the other is 2 miles west of the village, and half a mile from shore, and here the principal catch is halibut." Today, halibut is caught around much of the island (Figure 5-11), while cod is taken chiefly from the north side of the island (Figure S-12). As at St. Paul, specific fishing locations on a given day are determined largely on the basis of currents, tides, and weather.

The same basic pattern of fishing partnerships described above for St. Paul is also found on St. George, although it may be somewhat less widespread in the latter community. It was estimated by informants that perhaps 250-400 halibut are caught in St. George annually: returning from a fishing trip with three halibut is considered a very good catch, although greater numbers are not unknown. It was reported by informants that over the past several years cod fishing has improved in the waters around St. George. There are approximatley 17 skiffs in St. George today.

Discussion. Three additional points should be mentioned regarding fishing in St. Paul and St. George. First,

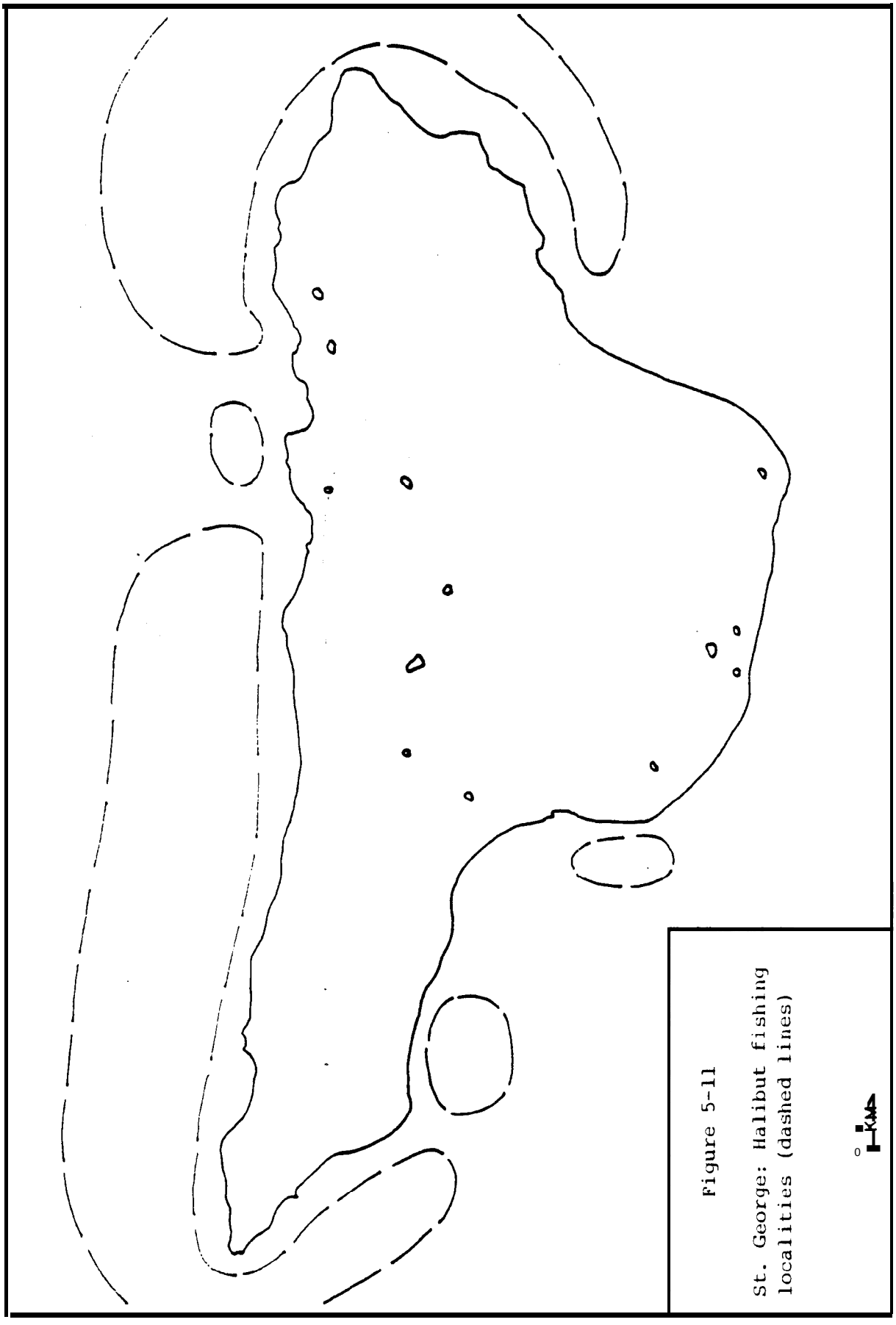

Figure 5-11

St. George: Halibut fishing localities (dashed lines)

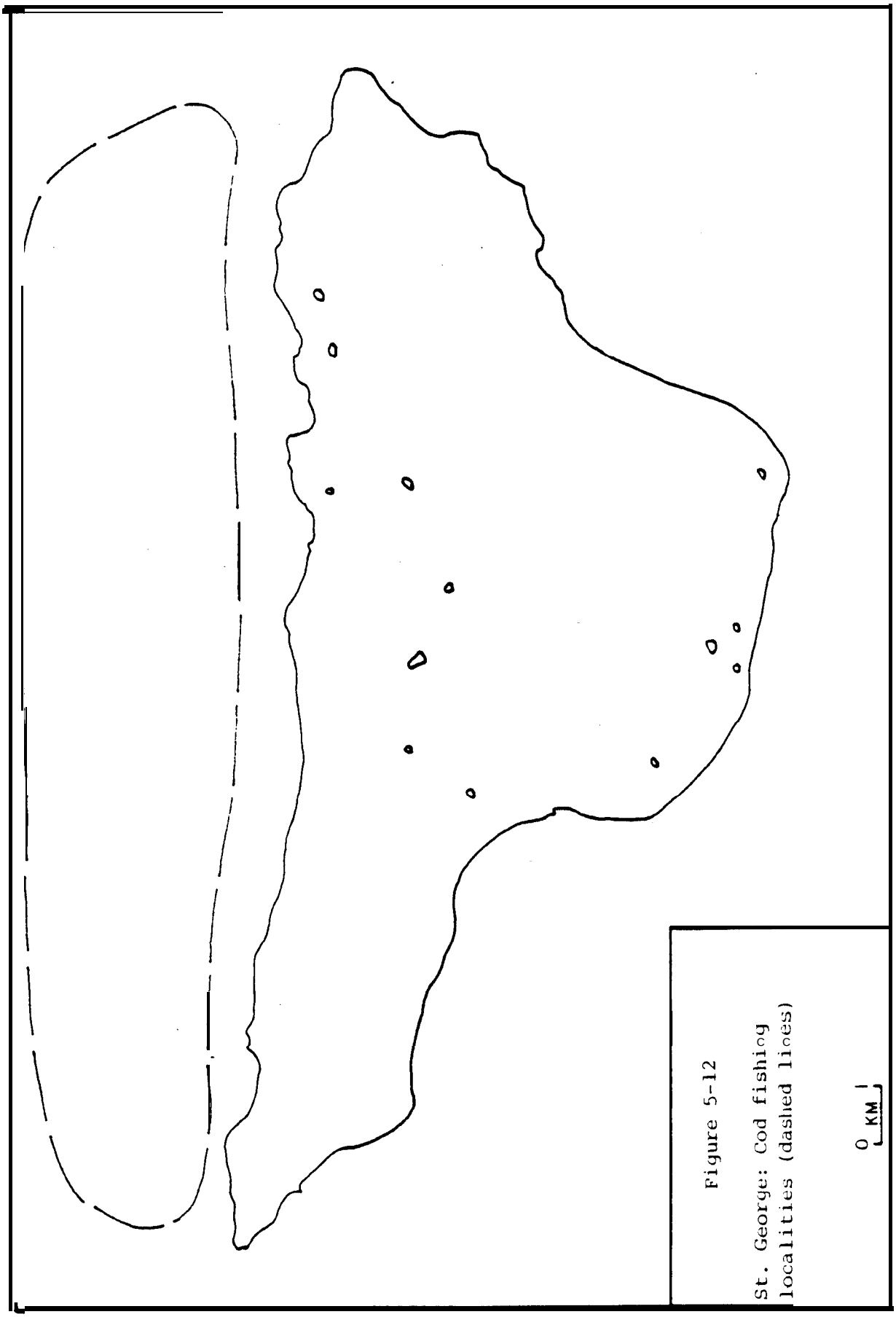

Figure 5-12

St. George: Cod fishing localities (dashed lines)

in addition to cod and halibut, sculpin are sometimes taken by residents of both islands. These fish are probably most popular with some older residents. Second, the equipment required to fish for halibut (or other fish) is itemized in Table 5-9. While the figures are approximate, it is clear that both the first year cost and'cost per year are substantial amounts: this underscores the importance (both dietary and cultural) of halibut to their subsistence economy. Third, halibut, like other subsistence resources, is shared among community members, especially during the fishing season when the fish is fresh.

TABLE 5-9:--Total cost and yearly cost of halibut fishing per fisherman

Item	cost	Useful Life (yrs)	Cost Per Year
16-foot aluminum skiff	$1600	5-10	$80-160
25 HP outboard	$1500	2-3	$500-750
VHF radio	$400	10	$40
Fuel			
Oars	$25	--	NEG
Fishing line	$20	1	$20
Tackle	$10	1	$10
Bait	0	--	0
First year cost	$3680	--	--
Total cost per year	--	--	$775-1105

NOTE: All figures approximate, depending on product brand, shipping route to the Pribilofs, and other factors.

NEG = Negligible

7. Murres and murre eggs

The earliest reference to murre hunting and egg collecting in the Pribilofs comes from Khlebnikov (1979:16), who writes of the early 1800s:

> . . . [F]or use in parkas, only three kinds [of birds] are obtained, i.e., murre, tufted puffin, and horned puffin. Various methods are used to catch them. Bags, similar to those used for trapping fish, are sometimes made and when a bird flies near the cliffs, the sack is raised to cover and entangle it in the netting. Sometimes individual nets 1-1/2 fathoms in length and width are made, which are also thrown onto the cliff, at a place where the most birds are seen. The netting is stretched out during the drop, and the birds, seeing this, rise from the site, get caught in the net, and are pulled up together. A method still used to catch birds involves a mesh made from baleen, which is lowered on a string to the cliffs. The harvesting of birds begins in May for the murre, and in June for the horned puffin. The number of birds taken on St. George Island is from 1,000 to 2,000 and on St. Paul Island from 5,000 to 7,000. On this latter island, up to 150 parkas are sometimes made, into which go 48 skins of murres. Besides their use in parkas, large numbers of birds are caught for food: during a continuous harvest, the meat of these birds is to a large extent dried for winter use. The eggs of various birds are collected in May and June. Having been lowered on straps to the cliffs, the people collect the eggs, which are pulled up by bucket. The collection of eggs is sometimes combined with danger, because straps wear through on the rocks and the hunter, having been broken off, drops down and is hurt or fatally injured. For which there were many examples in various places. The eggs of birds placed in sea lion fat keep well for use throughout the year.

Walrus Island, until recently, was an important site for murre egg collecting. Elliott, reporting that the Aleuts went to Walrus Island only once a year for a few days during the egging season (1881:93), describes this activity in the following way (1881:126):

> But the heart of the Aleut swells to its gastronomic happiness when he can repair, in the months of June and July, to . . . the lava table-bed of Walrus islet, and put his . . . hands on the gaily colored eggs of the "arrie" . . .; and if he were not the most improvident of men, instead of taking only enough for the day, he would lay up a great store for the morrow, but he never does. . . . On . . . July 5, 1872, six men loaded a badarrah at Walrus islet, capable of carrying four tons exclusive of our crew, down to the water's edge with eggs, in less than three working hours.

Elliott's description is supplemented by a drawing of Aleuts "Gathering Eggs on Walrus Island" (1881:Plate XXVIII).

Osgood et al. reports from 1914 the following concerning murres and their eggs (1915:122):

> Many of the birds are shot, especially in the spring, and the eggs are an important article of food . . . . Many are taken from the cliffs of the two main islands, but the main source of supply is Walrus Island, about 10 miles from St. Paul. Here the birds nest to the number of many thousands. It is the custom for the natives to go to this island about the middle of June, when the birds have fairly started nesting, and to gather all eggs from a certain area. About a week later the place is revisited and the area lately denuded will be found restocked with fresh eggs. The birds will lay again, even if the second set is removed, and in some cases even a fourth egg may be deposited, but as the breeding ground is seldom revisited more than once a season, the taking of eggs causes practically no diminution in the species, but merely retards the breeding of a part of the birds a week or two. : . . The birds are never killed on the rookeries during the breeding season.

These vast quantities of murre eggs on Walrus Island are, apparently, a thing of the past. Hunt (1976:92) reports that the island is now home to over 1,000 sea lions and that murres are virtually absent.

St. Paul. On St. Paul murres are hunted at Southwest Point, the area between Zapadni Point and Antone Lake, southeast of Tolstoi Point, and Reef Point (Figure 5-13). Most are obtained on a few calm days when boats can be used, although they may also be shot from the shoreline at the base of the cliffs early in the morning. Since there are so many of these birds, hunters are limited in the number they take only by the amount of time they wish to spend. When large numbers are obtained, they are shared within the village. Murre hunting occurs in March and April.

Murre eggs on St. Paul are gathered on the northwest corner of the island (called "Tasmania" or "Tsammana" by local residents), the coast south of Ridge Wall, the area around Zapadni Point, and the area southeast-of Tolstoi Point (Figure 5-14). All of these locations consist of steep cliffs fronting the ocean. In addition, a trip to Walrus Island to collect murre eggs may be made, although this does not occur every year. Egg collecting takes place from about the first week of June to mid-July. It was reported that more people in St. Paul participated in murre egg collecting in 1981 than in recent years.

Murre egg collecting is an endeavor generally of younger men who are agile and strong. A small group will go to an egg cliff, and one member will be lowered on strong rope over the edge to get the eggs with his hands. On some

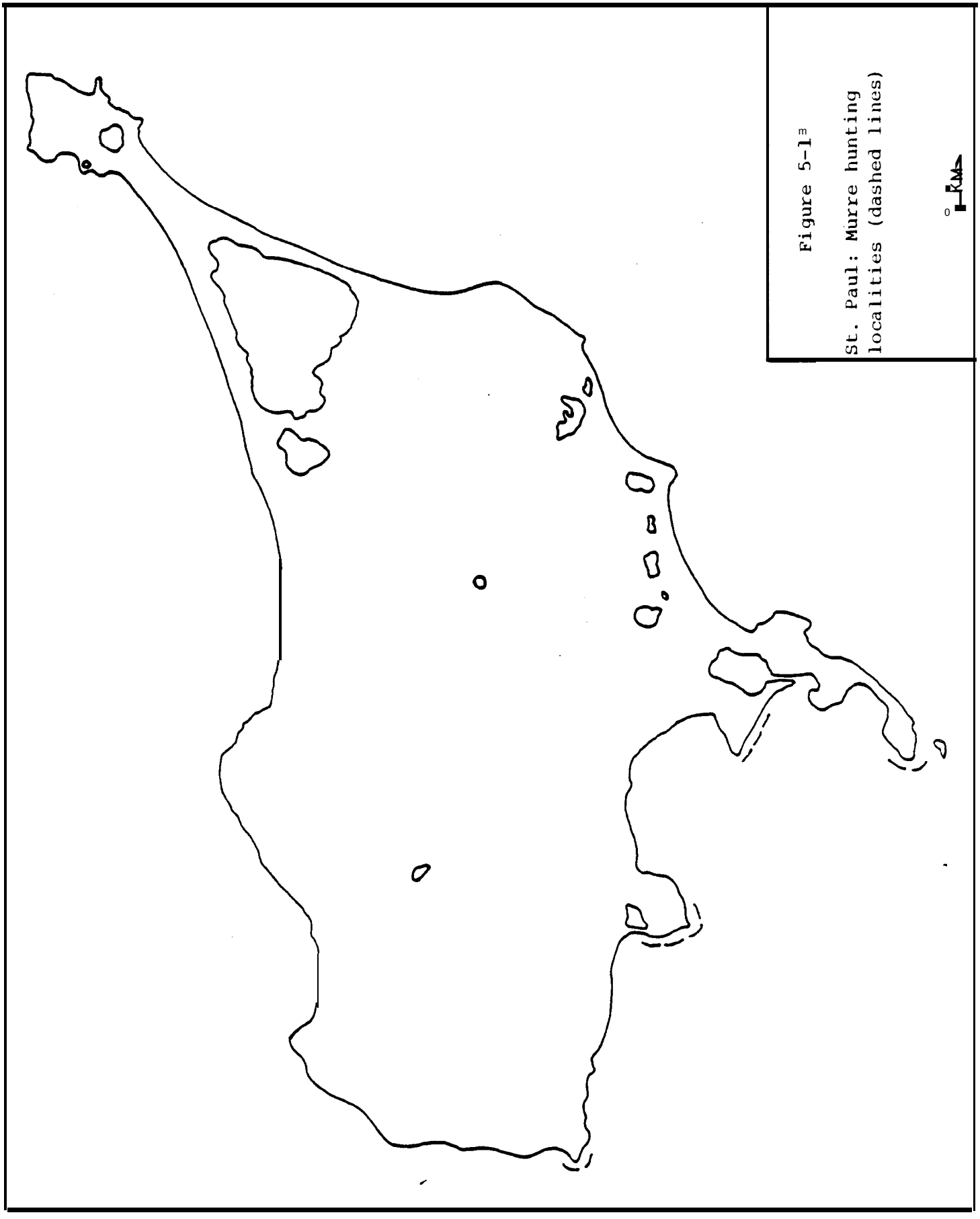

Figure 5-1[3]

St. Paul: Murre hunting localities (dashed lines)

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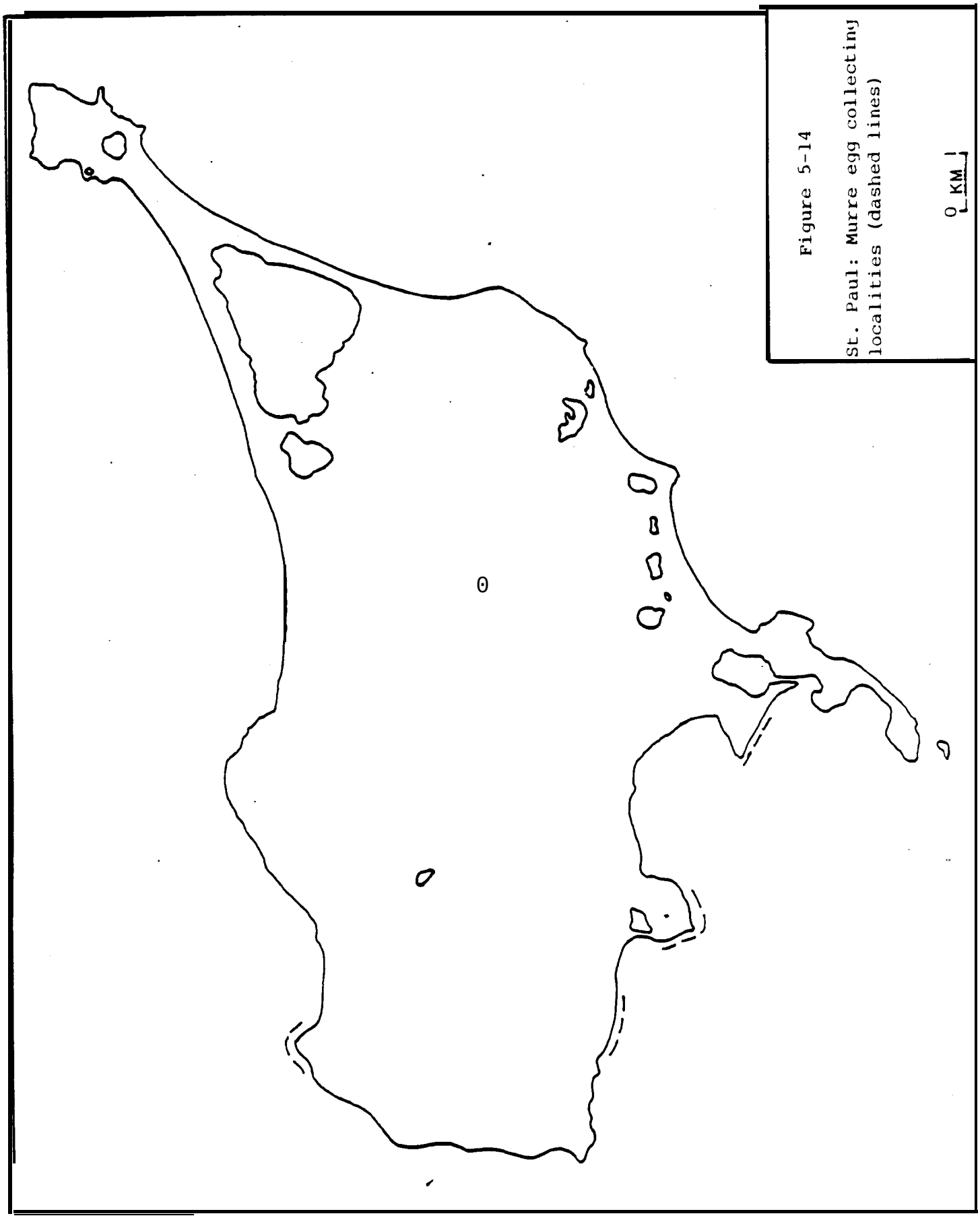

Figure 5-14

St. Paul: Murre egg collecting localities (dashed lines)

occasions, one of two similar devices will be employed to aid in egg collecting. One consists of a long (c.3-5m) bamboo pole, on the end of which is a small, sometimes wire, scoop used to pick up the eggs. The second is similar to the first, but instead of a scoop two pieces of shingle are taped to the end of the pole so that they may be forced over a murre egg and the egg lifted up to an assistant. The person lowered on the rope is held by the remainder of the group, who are the "anchors" of the rope.

Since murres will lay again if they find an egg missing from their rock ledge, egg collectors sometimes return to a collecting location several days after their first trip. The eggs collected this second time, therefore, are assured of being freshly laid.

St. George. Murres are hunted in many locations around the coast of St. George, but the primary locations are the cliffs just east of First Bluff (on the north shore), the coast in several areas east of the village, and a segment of coast just south of Tolstoi Point (Figure S-15). Hunting and sharing on St. George takes place in the same manner as that described above for St. Paul. An estimated 15 murres per household per year was reported.

Murre eggs are collected along several stretches of the north coast of the island, on the northern end of Zapadni

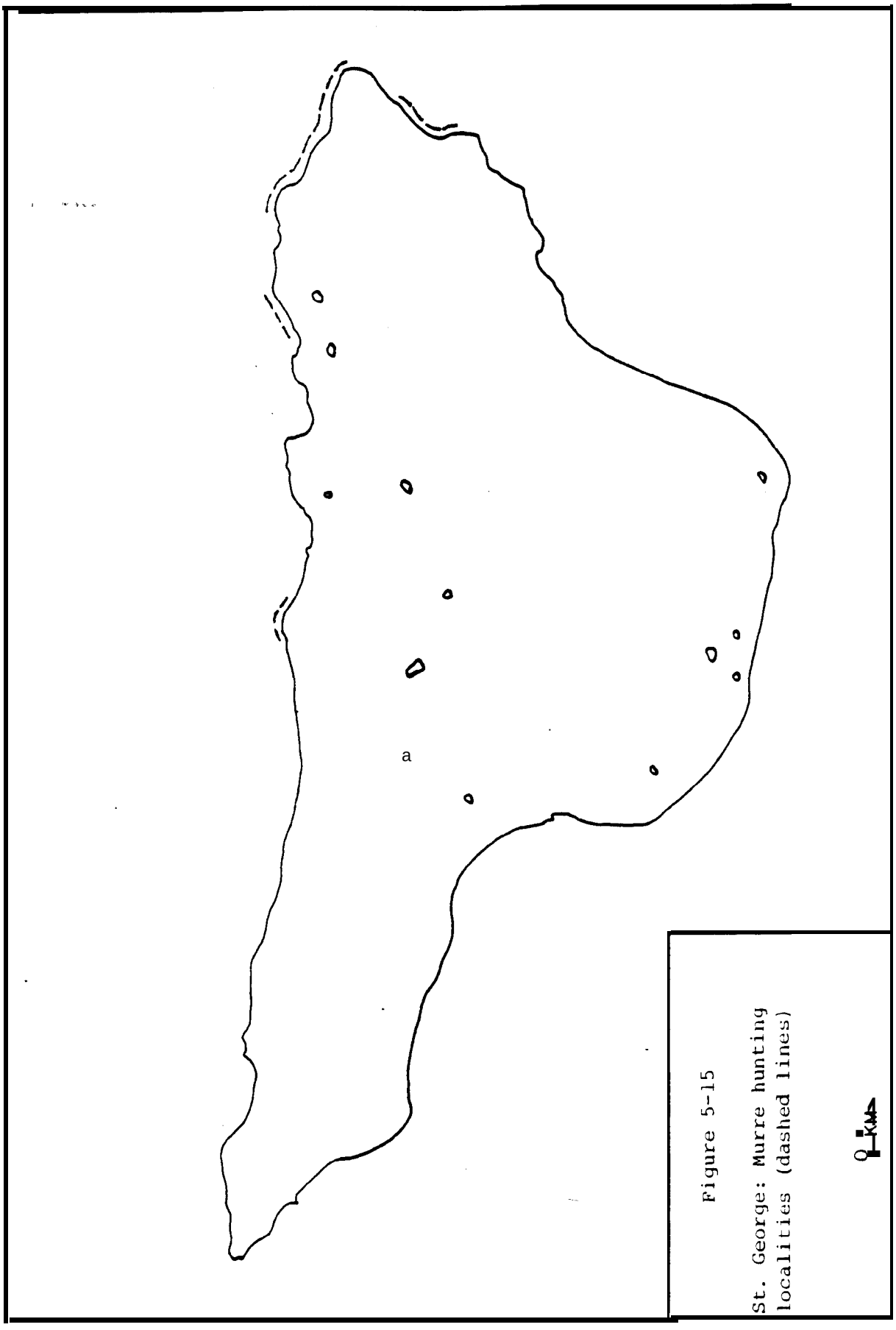

Figure 5-15

St. George: Murre hunting localities (dashed lines)

Bay, and on a point of land to the southeast of Dalnoi Point (Figure 5-16). The egg collecting season is the same as on St. Paul, as is the entire method of collection of the eggs, with the single exception being that the shingle device, rather than the scoop, is used when the eggs are out of reach. Likewise, eggs are shared within the village.

During the two weeks that the authors were in St. George in June 1981, several egg collecting trips were made. Two of these trips obtained approximately 150 eggs each. Such trips are not unusual on St. George, and it is clear from information gathered that more eggs are collected per capita on that island than on St. Paul. Residents of St. George remember when eggs would be stored in barrels packed in salt, or sometimes salt and oil, for use through the winter, a practice almost certainly followed in the past on St. Paul as well.

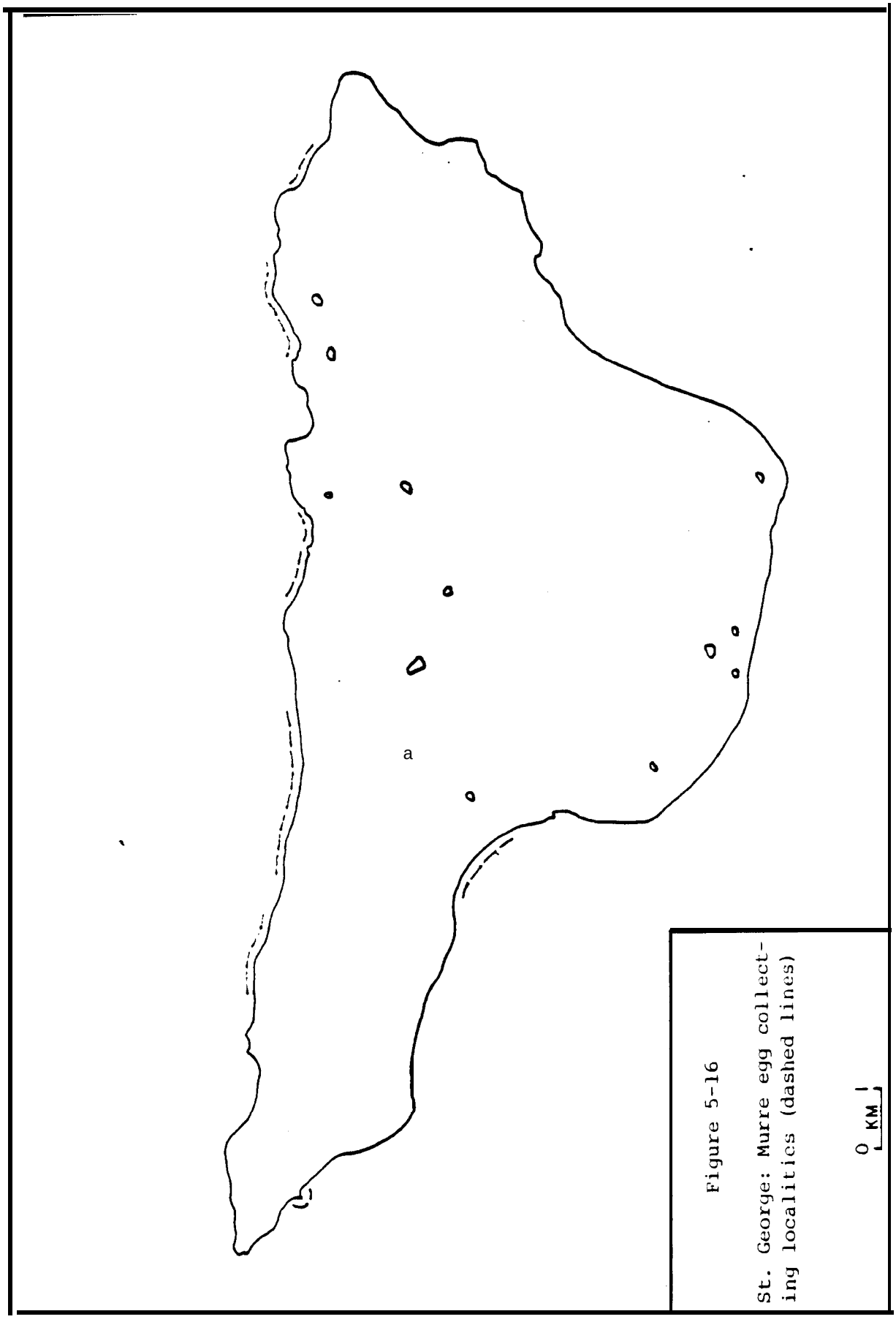

Figure 5-16

St. George: Murre egg collecting localities (dashed lines)

a. Kittiwakes and kittiwake eggs

Both black-legged and red-legged kittiwakes are found in the Pribilofs, and, although the latter are sometimes said to be preferred, both are considered good eating. Historical documentation concerning kittiwake hunting is sparce. Reporting on observations made in 1914, Osgood et al. (1915:123) states the following:

> The kittiwakes are especially relished as food by the natives, and numbers are shot in early autumn as they fly along certain parts of the cliffs or cross from bay to bay over low portions of the islands. Their eggs are small and so 'difficult to secure that the birds suffer practically no loss in this respect. The continued abundance of the birds seems to be good evidence that the shooting of a few for food has had no serious effect;

St. Paul. From March through May and in late September kittiwakes are hunted on St. Paul at Southwest Point, Tolstoi Point, and a number of lake and coast locations (Figure 5-17). Shotguns, including 12-, 20-, and 410-guage, are most frequently used for these birds, although occasionally sling-shots will be used, since by that method the meat does not get full of metal shot. The first kittiwake killed is often used as a decoy to attract more birds. It is held in one hand with the head thrown back and the wings out. When more birds are killed, they are laid on the ground as additional decoys.

In spring, hunting is from skiffs if the weather is suitable: otherwise, hunting is from land. Fall hunting is

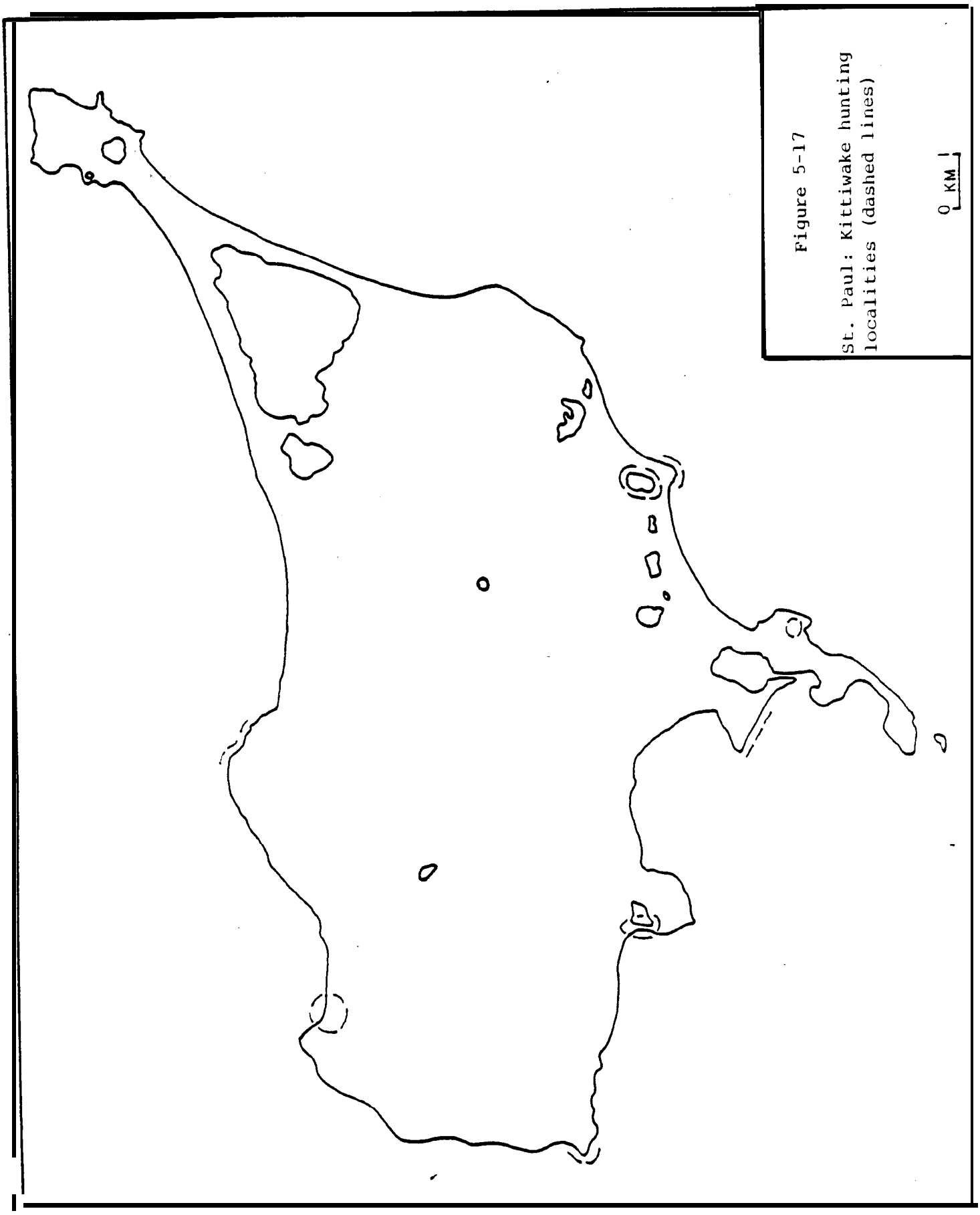

Figure 5-17

St. Paul: Kittiwake hunting localities (dashed lines)

often part of--a family outing or picnic. Family members can assist by holding decoys in the air. Hunting does not take place during the nesting season because the birds, especially the females, taste fishy. Kittiwakes are considered an important subsistence item and are eaten by most families.

Kittiwake eggs may be collected on the northwest point of St. Paul, as well as on several stretches of cliff along the southern coast of the island (Figure 5-18). It appears that they are not regularly collected today.

St. George. Kittiwakes are hunted along various portions of the north coast of the island, near several lakes, and near the Zapadni Bay coast (Figure 5-19). The hunting season and techniques, including the use of decoys, are the same on St. George as on St. Paul. On St. George, it was reported that the first bird may be attracted to the hunter by waving a white cloth. Kittiwakes, especially red-legged, are a highly prized food item on St. George, with an estimated 50 per household used annually. As with other resources, when large numbers of kittiwakes are obtained, they are shared within the village. Kittiwake eggs apparently are not gathered today, although older people report that they were used in the past.

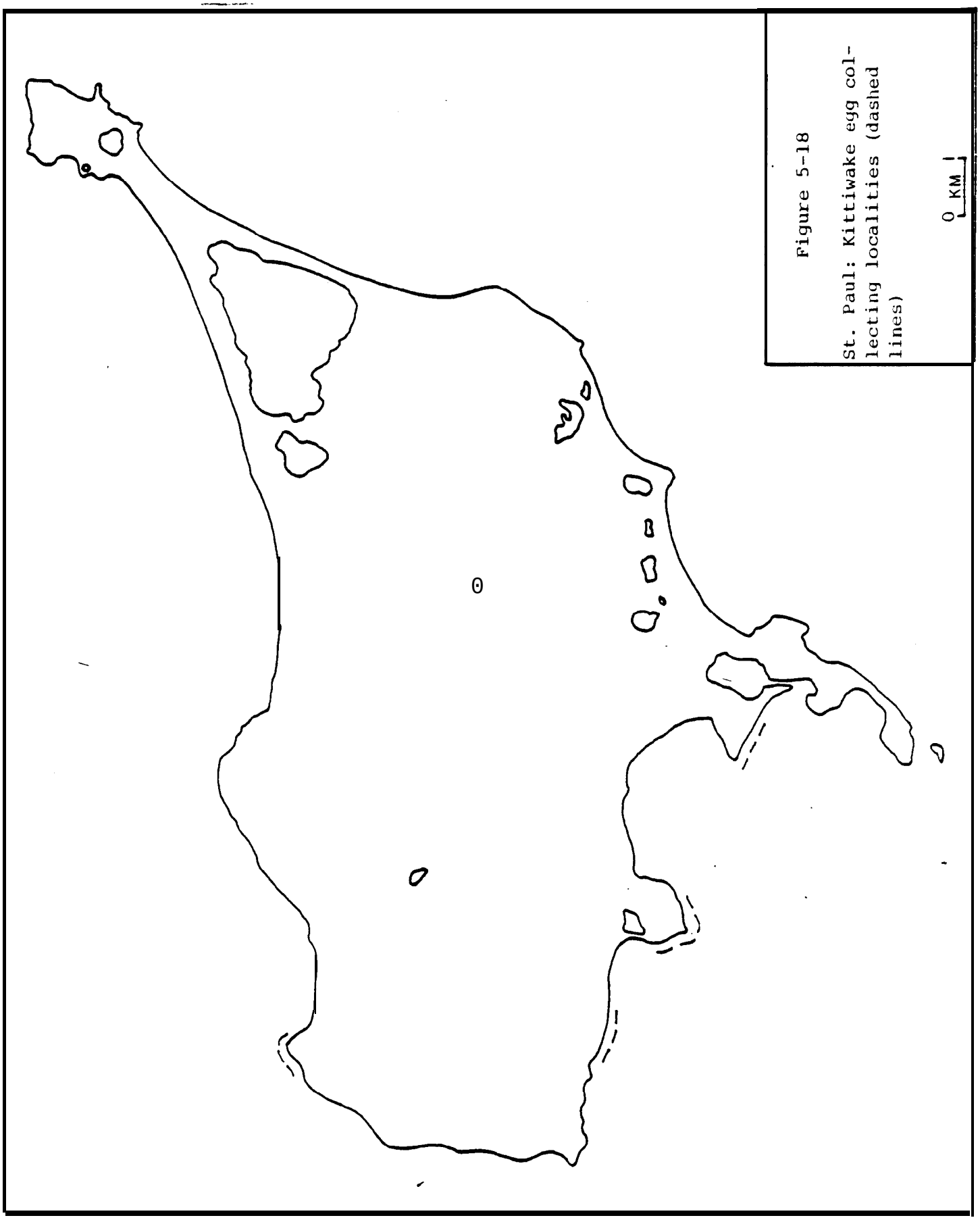

Figure 5-18

St. Paul: Kittiwake egg collecting localities (dashed lines)

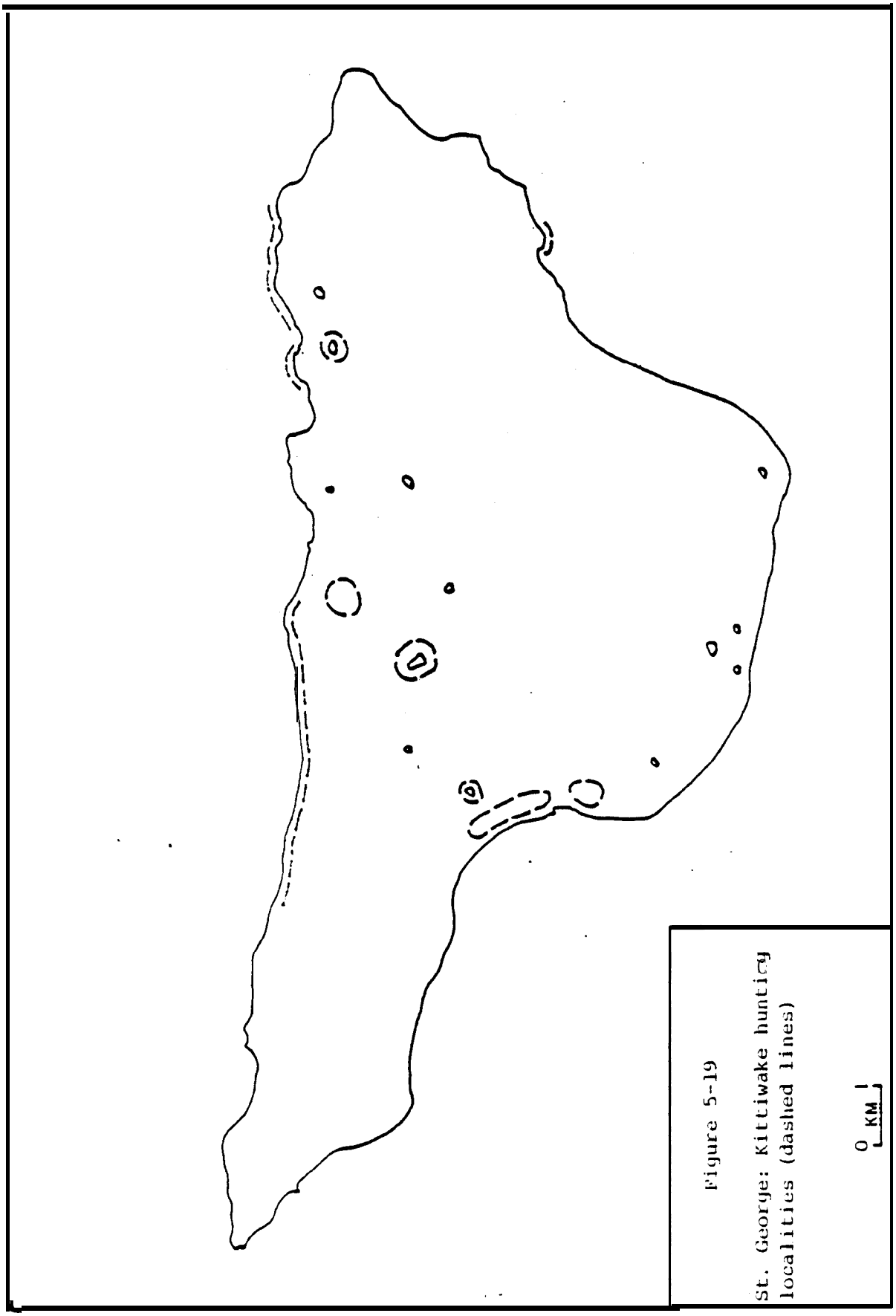

Figure 5-19

St. George: Kittiwake hunting localities (dashed lines)

9. Cormorants and cormorant eggs

Cormorants, referred to locally as "shags," have long been utilized in the Pribilofs, especially during winter months. For the 1870s, Elliott (1881:125-126) writes that red-faced cormorants "are unhesitatingly eaten by the people, and indeed these birds furnish, during the winter season in especial, an almost certain source of supply for fresh meat." He continues (1881:130-131):

> . . . [T]he natives regard it with a species of affection, for it furnishes the only supply they can draw upon for fresh meat, soups, and stews, always wanted by the sick; and, were these shags sought after throughout the year near as diligently as they are during the long spell of bitter temperature that occurs here in severe winters, driving other water-fowl away, they certainly would be speedily exterminated: yet, they are seldom shot, however, when anything else can be obtained. The terrible storms in February and March, when the wind "boorgas" [fierce, snow-laden gale] blow as tornadoes, are unable to drive the shag away, but all other water-fowl, even the big northern gulls, depart for the open water south.

In 1914, Osgood et al. (1915:124) observed a similar pattern of use: " [The red-faced cormorant is] not very abundant, but is easily obtained in winter when other birds are scarce, and is, therefore, welcomed."

Today, cormorants are often referred to as "Aleut turkeys." As explained to the authors, years ago turkeys were sent to the Pribilof Islands for the white administrators to eat for certain holidays. This food was not shared with the Aleuts, who provided their own "turkeys" by hunting

cormorants. According to residents today, the cormorant is a bird with a good deal of meat and is good eating when it is fat.

The eggs of cormorants, available from about 20 May to 10 July, apparently have never been utilized to a significant extent, perhaps because, as has been reported both in the literature (e.g., Khlebnikov [1979:4]) and by residents of the Pribilofs to the authors, they are difficult to cook to a pleasing consistency. Elliott (1881:126) also mentions the relatively infrequent use of cormorant eggs.

St. Paul. Cormorants may be found around most of the coast of St. Paul and, consequently, are hunted in no special locations. Few of these birds, however, are hunted today, and those that are obtained are usually given to older persons who are fond of them.

St. George. Many stretches of coastline on St. George are used for cormorant hunting (Figure 5-20), with hunters shooting with 12-gauge shotguns from below the cliffs at the birds overhead. Figure 5-20 also indicates two areas where cormorants were hunted in the past. It was estimated that about 50 cormorants were killed in St. George between December 1980 and March 1981, with about 10-15 households utilizing them. Thus, it appears that far more cormorants are eaten per capita in St. George than in St. Paul.

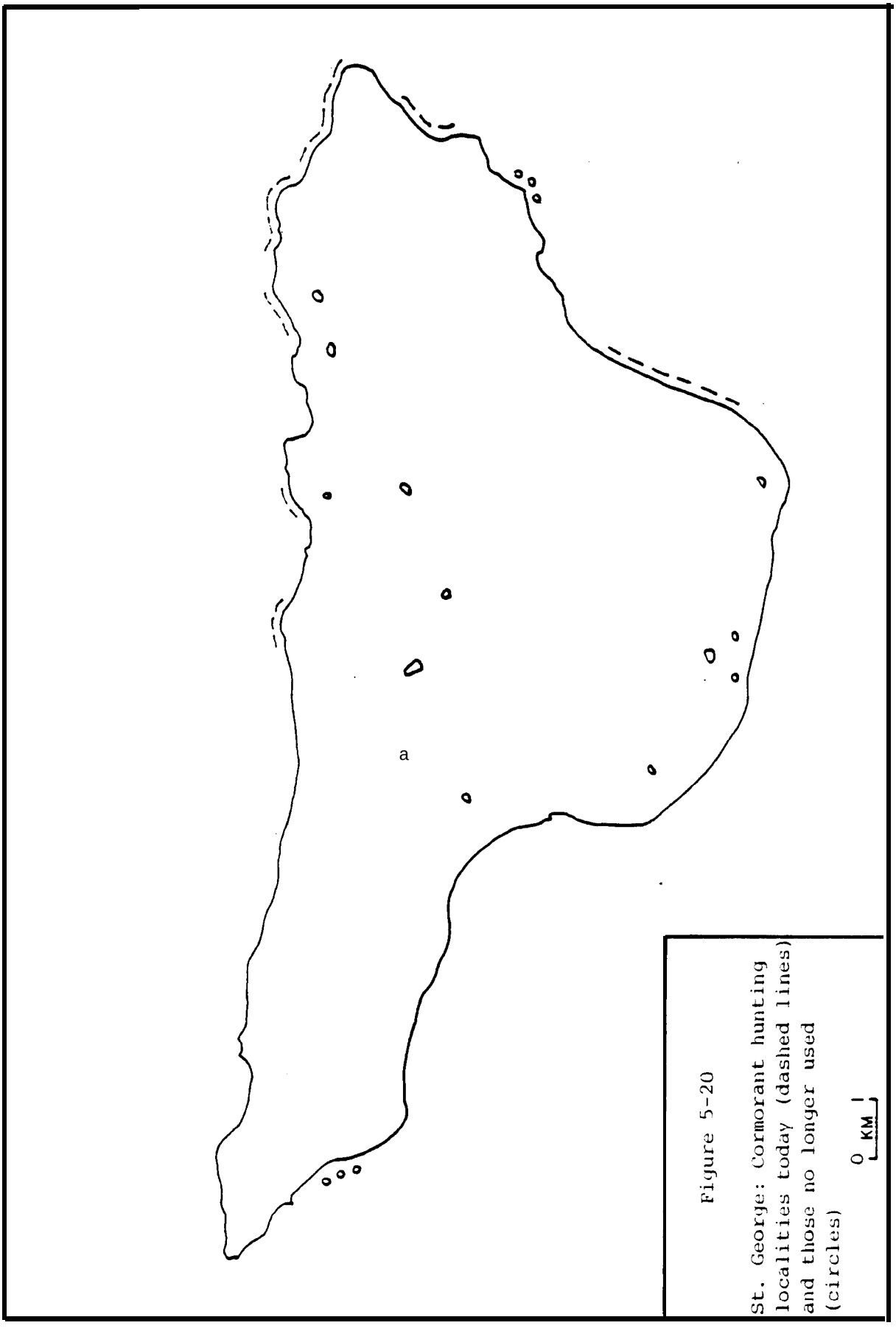

Figure 5-20

St. George: Cormorant hunting localities today (dashed lines) and those no longer used (circles)

10. Least auklets

This small (about 15 cm) bird has long been a dependable item in the diet of the Pribilof Aleuts. Khlebnikov, writing in the early 1800s, characterized least auklet meat as "fairly tasty" (1979:4), and Osgood et al. shortly after the turn of this century wrote.that this bird "exists in such myriads and is so easy to capture that it is of considerable value as food, and its arrival in April is eagerly awaited" (1915:123).

Usually referred to as "chooshkies" (or "choochkies" (Elliott 1881:14]) by the residents of St. Paul and St. George, least auklets historically have been captured by a variety of means. The flight of these birds is typically in large flocks close to the ground, and Elliott describes that in the 1870s they were "caught by the people with hand-scoops or dip-nets to any number that may be required for the day's consumption" (1881:14). Observing in 1914, Osgood et al. states that "Those taken for food by the natives are netted in spring as they fly along the cliffs" (1915:123). The least auklet season apparently lasted only until their breeding season began, that is, until about the middle of June, for Osgood et al. mentions that "the[se] birds are practically unmolested during the breeding season" (1915:123).

Use of least auklets as food was diverse, with-"their tiny, rotund forms making pies of rare, savory virtue, and

being also baked and roasted and stewed in every conceivable shape by the Russian cooks" (Elliott 1881:14).

St. Paul. Least auklets are obtained on St. Paul from coastal areas generally close to the village. These include the following (Figure 5-21): from East Landing to Reef Point, on the north side of the village on the shore of Village Cove, on the southern shore of Tolstoi Point from the point to Village Cove, and on the rocky barrier to the west of Antone Lake (north of Zapadni Point). Each of these areas is one of rocky, boulder-strewn beach, where the birds perch and nest beneath the rocks.

Today, least auklet hunting is an activity generally though not exclusively undertaken by children,. who have a good deal of fun on these outings. Most often, group's of young people will go to the areas listed above (that from East Landing to Reef Point is the most popular) early in the morning - as early as 4 or 5 a.m. - or occasionally in the evening. The main hunting method comprises waiting quietly on the rocks and swinging a long bamboo pole towards an on-coming flock. Since the birds fly relatively slowly, it is possible to take a second, backwards swing through a flock if the first swing failed to strike a bird. Another method consists of throwing a short stick into a passing flock. Netting least auklets, common in the past, is now something rarely, if ever, done.

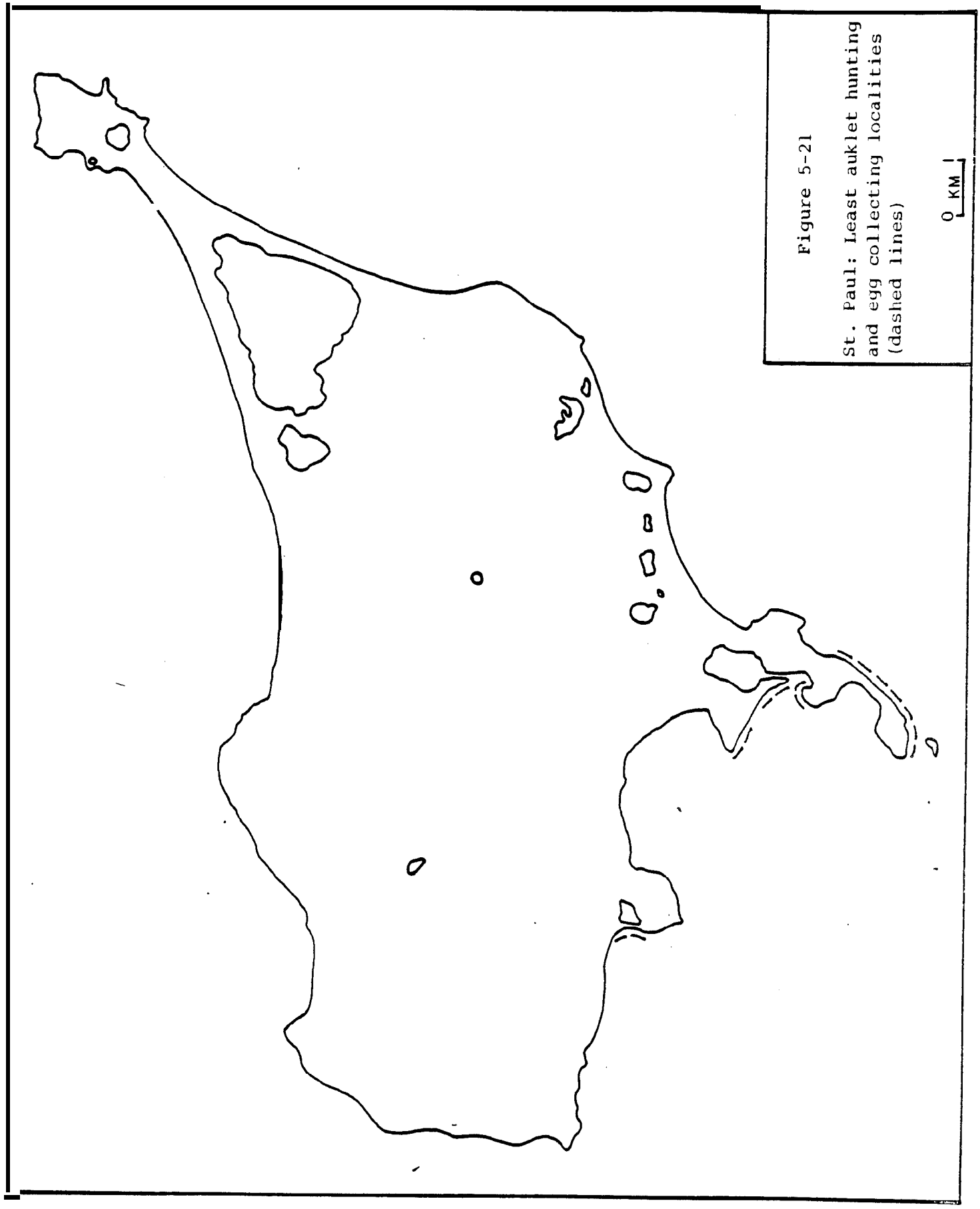
Figure 5-21
St. Paul: Least auklet hunting and egg collecting localities (dashed lines)
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Least auklet hunting is important in that it is one of the few subsistence pursuits that children can engage in, and, moreover, it is an activity which girls as well as boys enjoy. While generally recognized as an entertaining pastime for young people, the birds taken do contribute in a small way to a family's food supply.

St. Georse. On St. George, least auklets are hunted primarily along the road just west of the village on the way to the airstrip, but they are also obtained further west along the road past the airstrip (Figure 5-22). It is in these areas that the birds, flying between the sea and their nesting locations in the talus slopes inland, regularly pass very low to the ground.

As in St. Paul, least auklet hunting is mainly an activity in which young people engage, although adults sometimes participate also. Hunting takes place in the early morning or evening. The main method is to throw a stick about 1 m (3 feet) long vertically into a passing flock of birds, with several stick-throwers being directed in their timing by one individual giving commands. Often these people will hide along the road berm on the side opposite the approaching least auklets.

Another method used in the past but less so today employs a wire tied to a rock which is then swung in a circle

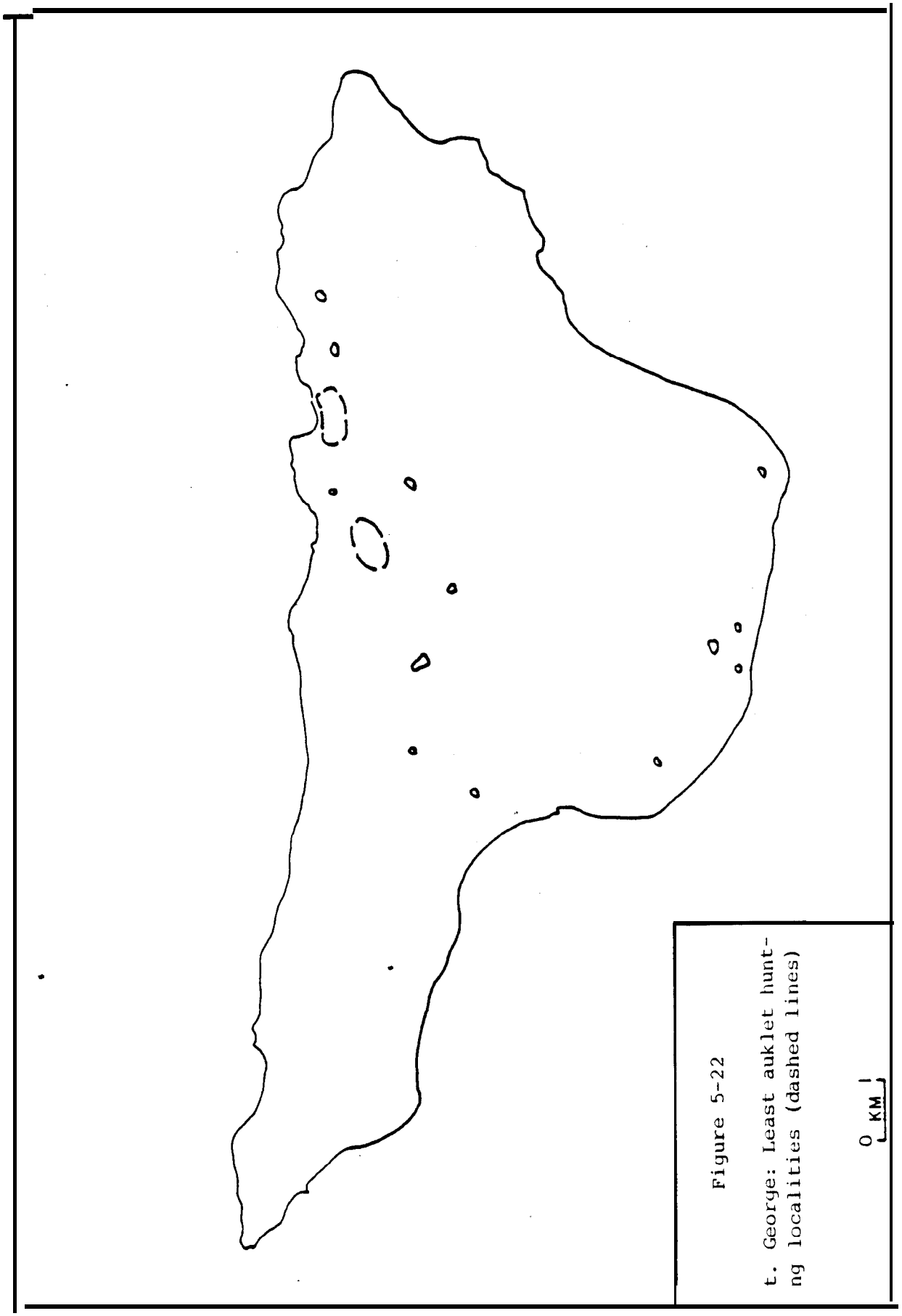

Figure 5-22

t. George: Least auklet hunting localities (dashed lines)

through the bird flocks. Also used in the past were long nets tied to poles at each end. These would be lifted into the path of an oncoming flock.

Least auklet hunting on St. George has the same general characteristics as on St. Paul, with the birds considered good eating. Since many of these birds breed inland on St. George and pass very close to (and through) the village in great numbers in the morning and evening., it is possible that more of them are utilized per capita there than on St. Paul.

11. Least auklet eggs

Khlebnikov (1979:4) refers to the use of least auklet eggs in the early 1800s and describes them as "fairly tasty." It appears from the limited references to least auklet eggs, however that, as Elliott (1881:126) states, they "are never secured in sufficient quantity to be of any consideration as major articles of diet."

St. Paul. On St. Paul, least auklet eggs are gathered from the same locations reported earlier for least auklet hunting (Figure 5-21). The birds lay their eggs in the crevices between and beneath the rocks along the beach, and it is a great deal of work to move the rocks (carefully) to retrieve the small eggs. Consequently, very little least auklet eqq collecting is undertaken in St. Paul. In the past, however, there was a greater effort made to utilize these eggs.

St. George. On St. George, the least auklet egg gathering areas differ from the areas in which these birds are hunted. Along the beach front just to the east of the village, along the shore at the base of the cliffs south of the dock at Zapadni Bay, and along the talus slopes between Ulakaia Hill and the village are the primary egg gathering locations (Figure 5-23), although they may be collected from other areas as well.

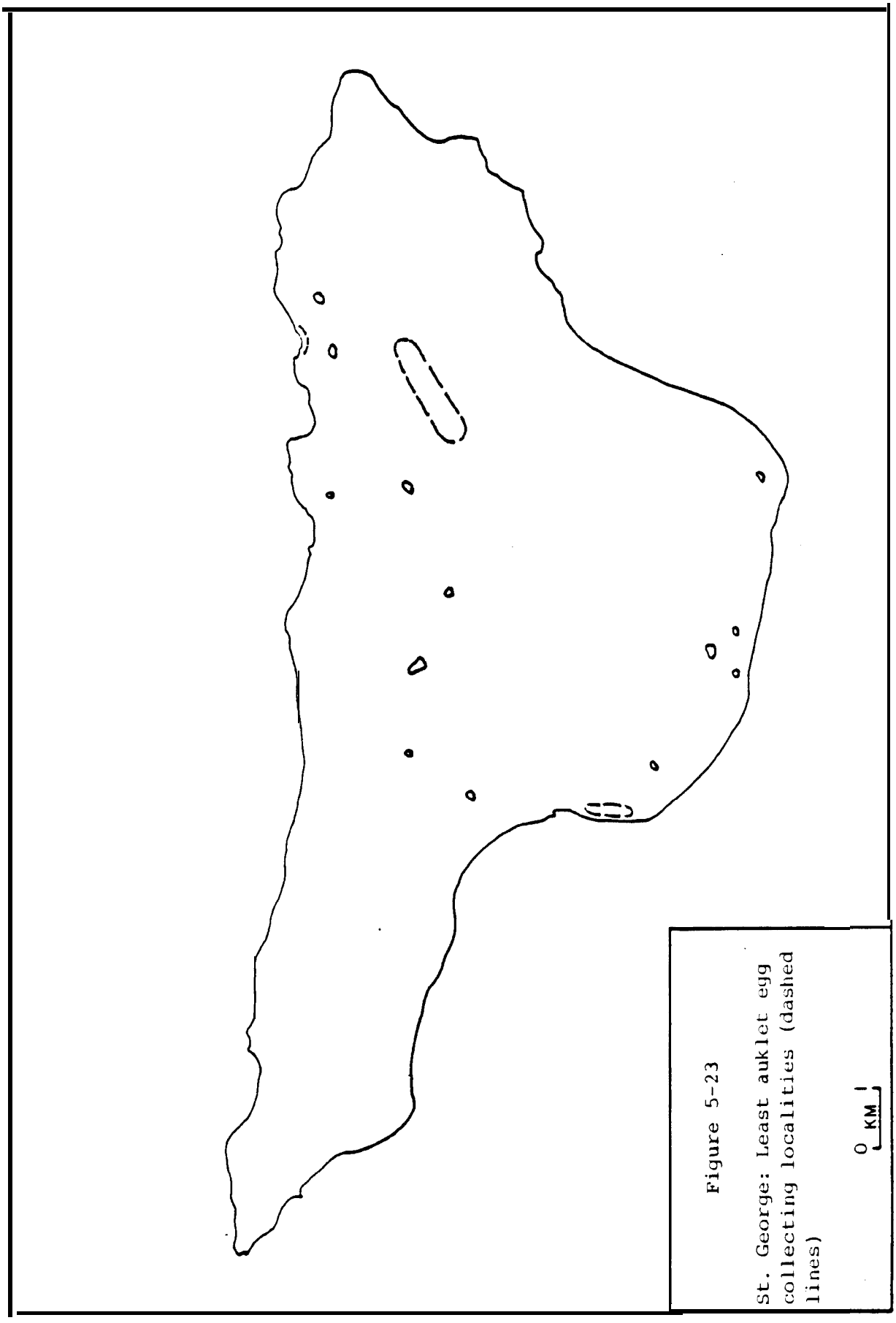

Figure 5-23

St. George: Least auklet egg collecting localities (dashed lines)

Least auklet eggs are considered a special item in St. George, primarily valuable for fried bread, biscuits, etc. They are quite difficult to get, however, since the effort required to move rocks and dig out the nests is substantial. Oftentimes, bird droppings and chirping indicate a nest area, but the eggs are too deep to retrieve. Although the basic collection method involves work with the hands, occasionally a short "clapper" similar to that used for murre eggs and described earlier will be used to reach farther into a burrow to collect the eggs. On one day in 1981, 79 least auklet eggs were collected.

12. Lake ducks

This category includes those ducks which are most often hunted on the lakes of St. Paul and St. George. There is a lack of documentary information concerning the history of their use, but it may be assumed that contemporary hunting of these animals has substantial time depth.

St. Paul. Virtually all of the lakes on St. Paul may contain ducks, although those marked in Figure 5-24 are those most often gone to by hunters. Big Lake, which also may contain ducks, is considered to be too large to hunt at effectively since ducks are often far from shore and boats are not used. Mallards, pintails, shovelers, buffleheads, green-winged teals, Baikal teals, and brants are the species most often hunted. Weather is a major determining factor in the availability of ducks. The hunting season is generally from the end of September to the end'of October, with some in the spring as the ducks migrate.

St. George. Lake ducks are hunted chiefly in the small lakes which are relatively close to the roads on the island (Figure S-25, in which the new road from the village to Zapadni Bay which parallels the trail is not marked). The same species of ducks found on St. Paul are also hunted on St. George, and the hunting season is the same.

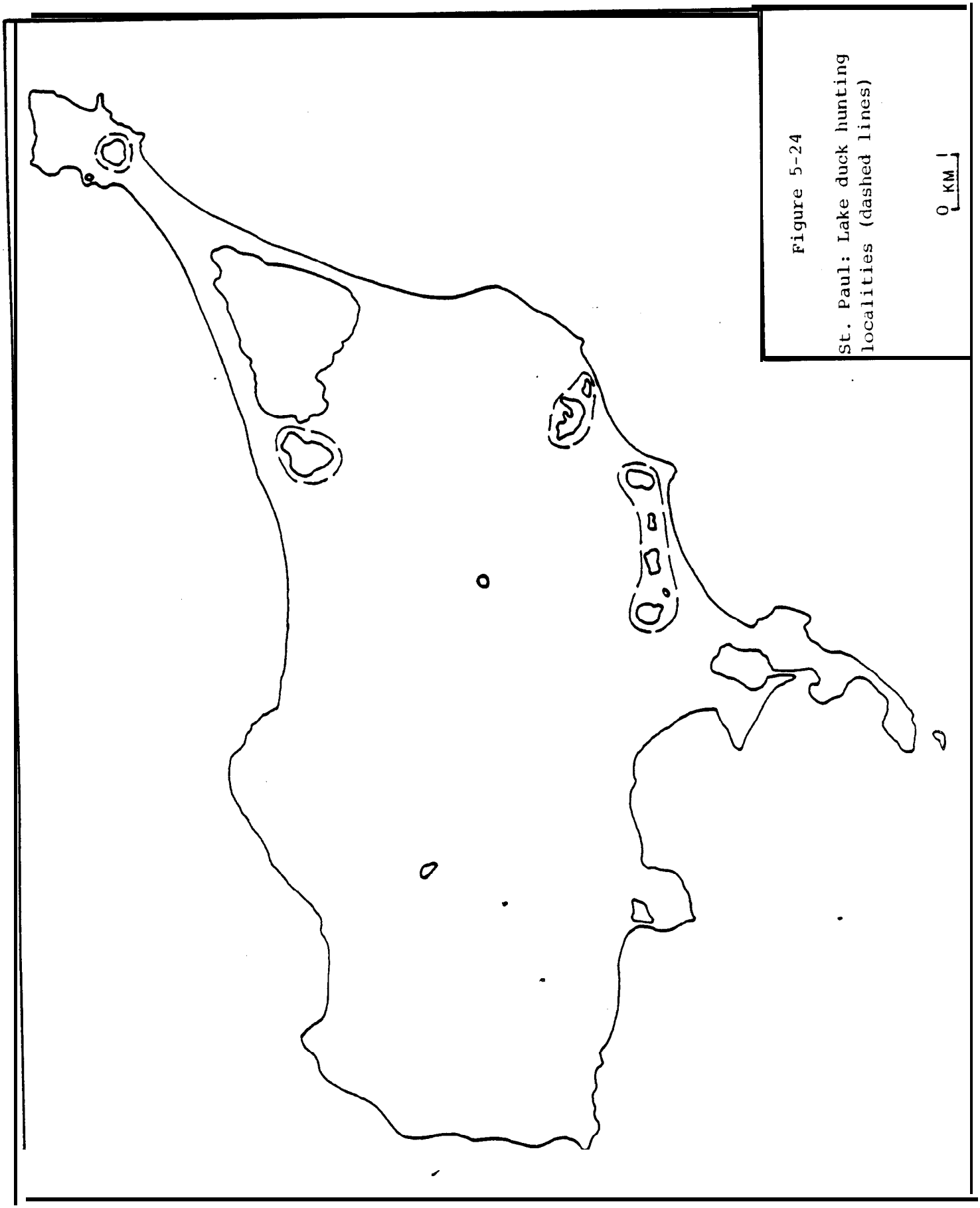

Figure 5-24

St. Paul: Lake duck hunting localities (dashed lines)

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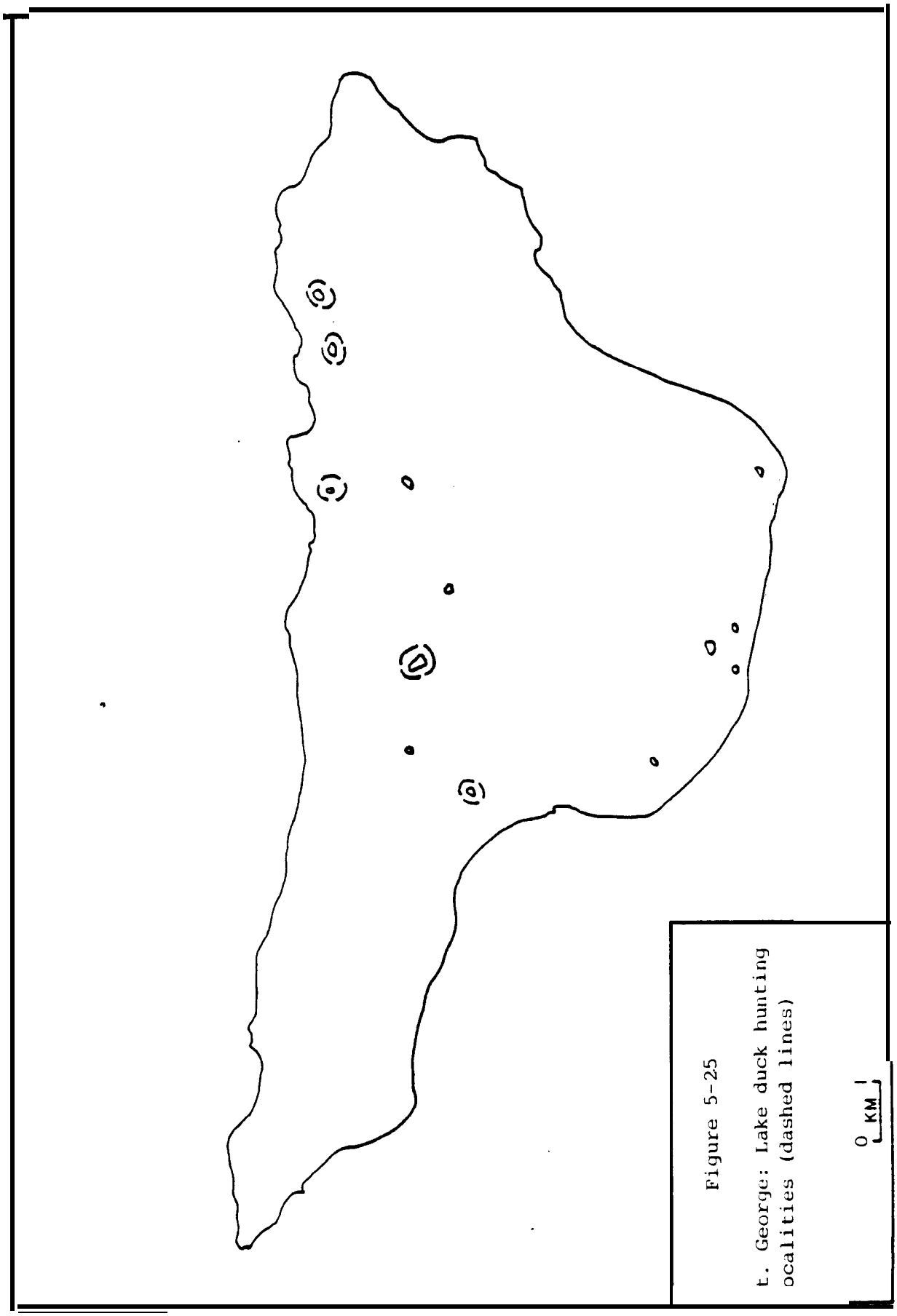

Figure 5-25

t. George: Lake duck hunting
ocalities (dashed lines)

13. Sea ducks

This category includes those ducks which are most often hunted along the coast of the Pribilof Islands. Included are king, Steller, and common eiders, oldsquaws, harlequins, buffleheads, and goldeneyes. As with lake ducks, there is virtually no historical documentation of their use, although it is reasonable to assume that they have been hunted for food since Aleuts first came to these islands.

The hunting season begins generally around October, with most birds being obtained from December through March. Twelve-gauge shotguns are the most common gun with sea-dogs used to retrieve birds in the water.

St. Paul. Sea ducks are hunted on St. Paul largely at the same locations, and often at the same times, that sea lions are hunted: on the various points jutting out from Northeast Point, at Tonki Point, near Black Bluffs (just north of East Landing), at Reef Point, and at Southwest Point. Also, sea ducks are obtained in Salt Lagoon (Figure 5-26).

St. George. As on St. Paul, sea ducks are oftentimes hunted on St. George in the same places and at the same times as are sea lions. Almost the entire eastern half of the north coast of the island, segments of the southeast coast from Garden Cove to Tolstoi Point; and the area near the dock at Zapadni Bay are the main hunting locations (Figure 5-27).

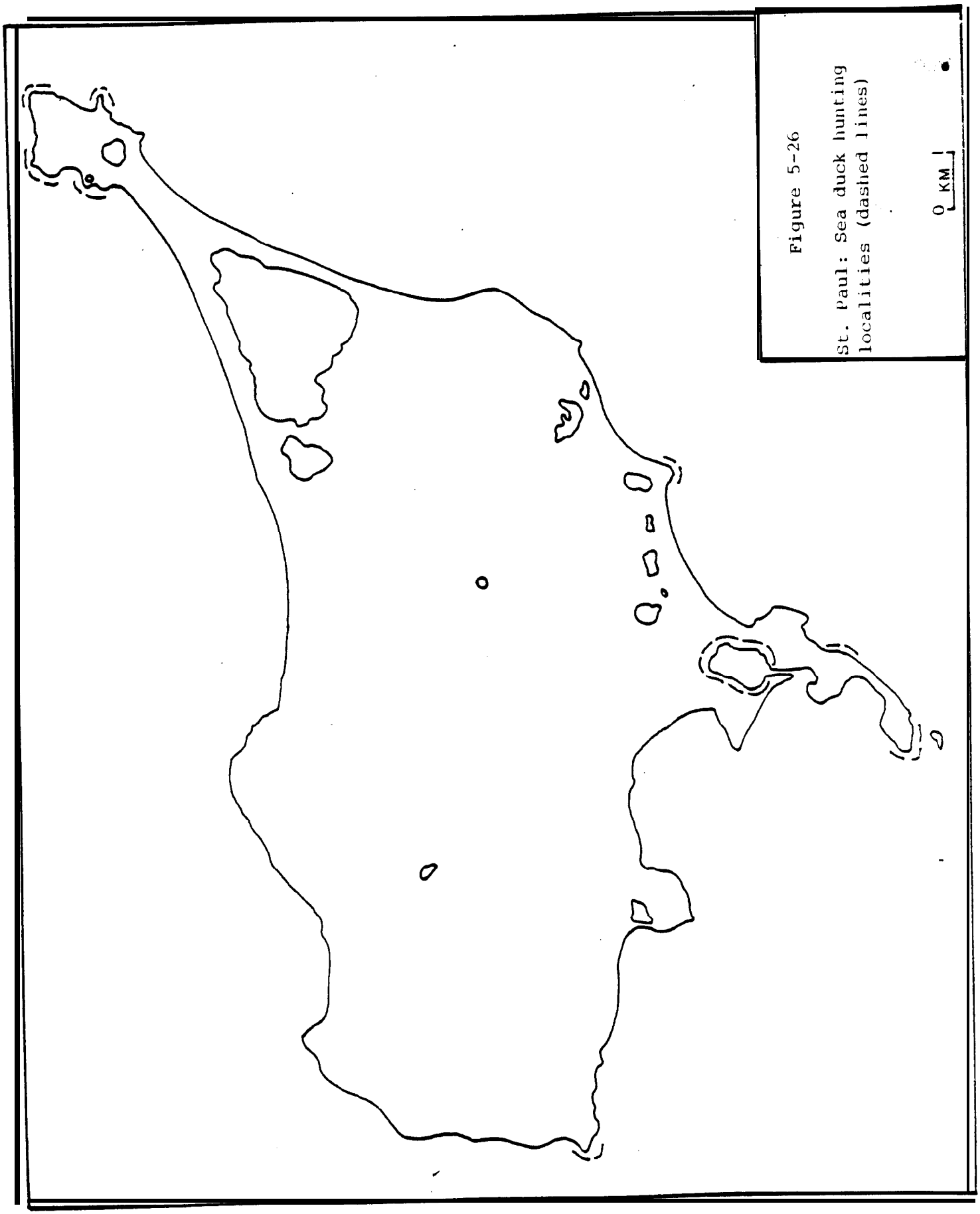

Figure 5-26

St. Paul: Sea duck hunting localities (dashed lines)

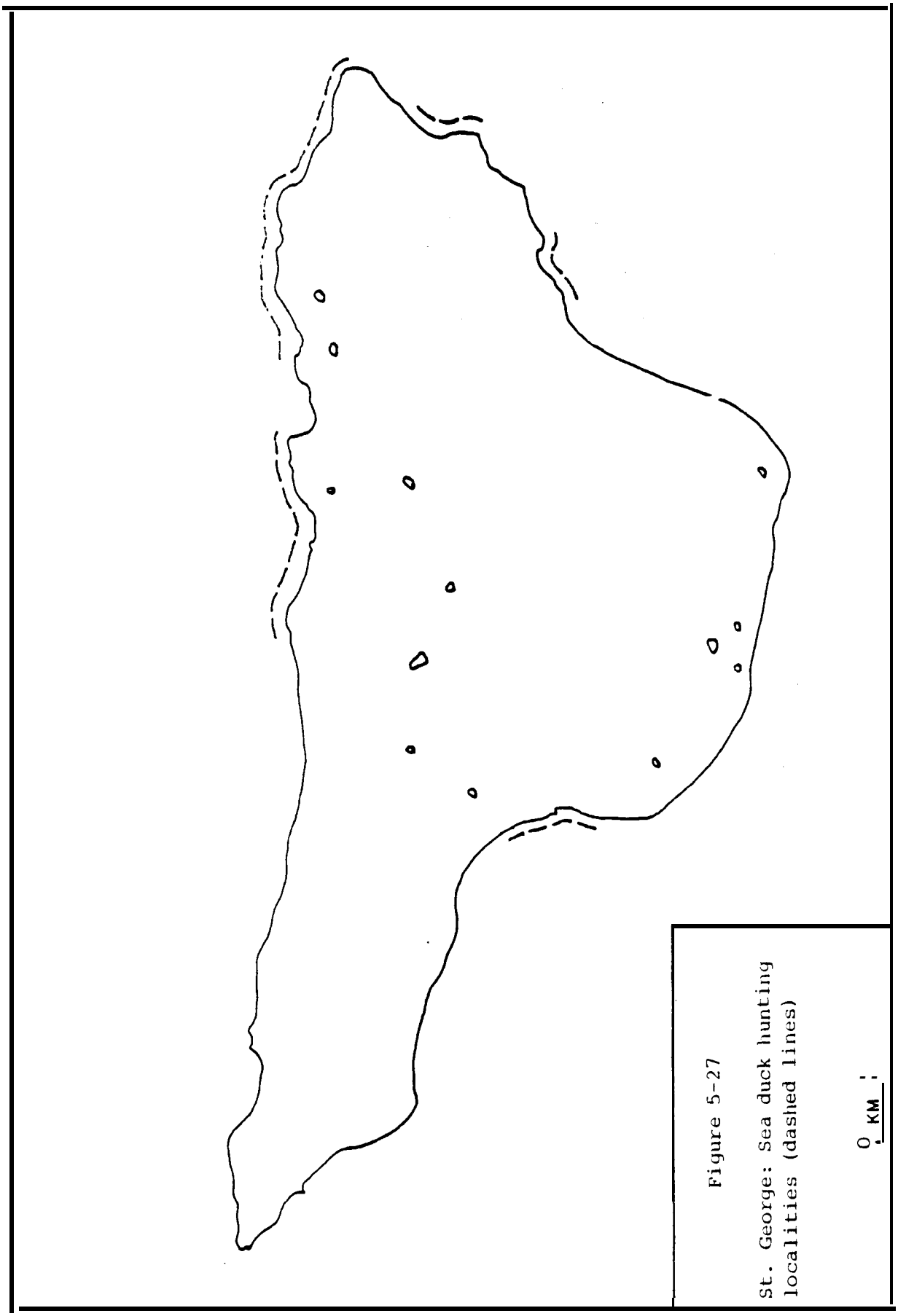

Figure 5-27

St. George: Sea duck hunting localities (dashed lines)

In addition to shotguns, it was reported that use of a .22 long rifle is a good way to hunt sea ducks. Hunting from a blind along the coast east of the village was also reported.

14. Other birds and eggs

In addition to those already discussed, a variety of birds and eggs of lesser importance are, or have been, utilized by residents of the Pribilof Islands. These are itemized below.

Geese. Emperor geese are occasionally found in lakes on both islands in the fall. Little discussion of this bird appears in the literature, although Elliott (1881: 130) and Osgood et al. (1915:123) mention briefly that it was hunted for food.

Glaucous-winged gulls and their eggs. Describing subsistence activities in 1914, Osgood et al. (1915:123) stated that "The eggs are sometimes utilized, and during the colder part of the year the birds are shot for food." Use of gulls for food in the past was reported by residents of St. George. Today, gull eggs are only rarely collected, and the birds are not eaten. On St. George, gull eggs were collected in the location near Garden Cove indicated in Figure 5-28.

Sandpipers. Osgood et al. (1915:123-124) wrote of the Pribilof sandpiper:

> The breeding season is passed by the birds mainly on the higher, more barren parts of the islands, where they suffer no harm from man. At the close of nesting, in August, the old and young congregate on the beaches,

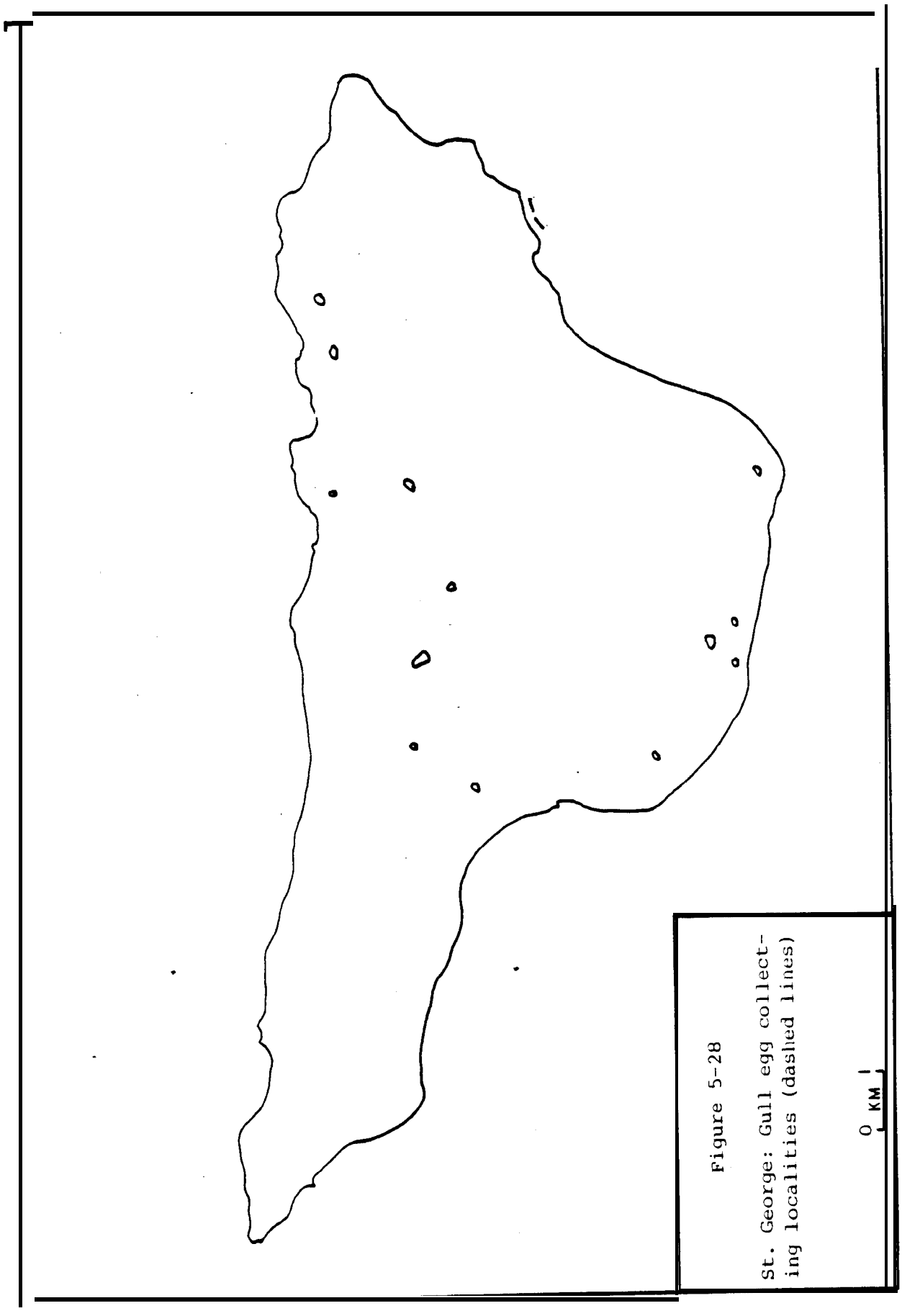

Figure 5-28

St. George: Gull egg collecting localities (dashed lines)

> where they are shot in some numbers by the natives, being highly relished as food.

Sandpipers were not mentioned by informants during the course of this study.

Fulmar eggs. Although St. George residents collect but a few fulmar eggs today for food, Elliott (1881:131) describes the more intense use of them in the 1870s:

> The natives prize them highly, and hence they undertake at St. George to gather their eggs by a method and a suspension supremely nazardous, as they lower themselves over cliffs five to seven hundred feet above the water. The sensation experienced by myself, when dangled over these precipices attached to a slight thong of raw-hide, with the surf boiling and churning three or four hundred feet below, and loose rocks rattling down from above, any one of which was sufficient to destroy life should it have struck me, is not a sensation to be expressed adequately by language; and, after having passed through the ordeal, I came to the surface perfectly satisfied with what I had called the improvidence of the Aleuts. They have quite sufficient excuse in my mind to be content with as few fulmar eggs as possible.

Elliott also points out the dangers involved in such undertakings (1881:131-132):

> On the head of Tolstoi Mees, St. George, the natives pointed out to me a basaltic egg-shelf which marked the death of one of their townsmen. It occurred in the following singular manner: he, the victim, had been very successful in securing a large basket of the first eggs of the season, and, desiring to continue the day's work, dispatched his wife back to the village with the oölogical burden, so that the basket might be emptied: meanwhile, in her absence, he put his little tethering-stake down anew, and, tying the rope of walrus or sea-lion hide to it, dropped over the brow of the cliff on it. A-gaunt fox, which had been watching the proceedings, now ran up and fell to gnawing the rope, so taut and tense with the weight of the suspended egg-hunter below: the sharp teeth of Reynard, under the circumstances, instantly severed it, and the unfortunate

> native was dashed to the rocky shingle some 400 feet below, where his lifeless body was soon discovered. The poor fellow lost his life by having, at some earlier hour of the day, rubbed his yolk-smeared hands upon the sinewy strands, for at that place only did the hungry fox attack them.

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Turnstones. Although not mentioned by residents of St. Paul or St. George during the course of this study, Osgood et al. (1915:124) stated the following:

> The Pacific Turnstone . . . occurs during the spring miqralion, and in August and September when old and young are on their way to their wintering ground on the Hawaiian Islands. While on the Pribilofs the birds spend most of their time on the killing fields, where they feed on the larvae of flesh flies in the remains of the slaughtered seals. They become very fat and are much prized as food by the natives, but soon become wary and are not killed in great numbers.

Horned and tufted puffins. Puffins have been, until the recent past, a source of food for Pribilof Aleuts. In addition, their skins were an important resource in the manufacture of clothing. The reader is directed' to Khlebnikov's discussion of the use of these birds quoted earlier in the section on murres.

15. Marine invertebrates

Relatively little documentary information is available concerning the history of use of marine invertebrates. Generally speaking, such items are not a substantial food resource to the people today.

Sea urchins. For the early 1800s, Khlebnikov (1979:9) writes that "the Aleuts make caviar and the fur traders make a drink that is almost pleasant and even enjoyable" from sea urchins. Elliott, later in that century, states (1881:137) the following:

> Frequently the natives have brought a dish of sea-urchins' viscera for our table, offering it as a great delicacy. . . . The native women are the chief hunters for [these animals], and during the whole spring and summer seasons they may be seen at both islands, wading in the pools at low water, with their scanty skirts high up, eagerly laying possessive hands upon every "bristling" egg that shows itself.

He adds that sea urchins are called "repkie" by the Aleuts and "are eagerly sought for at low tide and eaten raw by them" (1881:15).

Today, people in St. Paul occasionally collect sea urchins around the rocky shore to the north and south of the village and along the coast on the southern end of Zolotoi Bay (Figure 5-29). On St. George, urchins are obtained from amonq the rocks near the village as well as along the Zapadni Bay coast (Figure S-30). On St. Paul, urchins are sometimes collected using a long pole with a

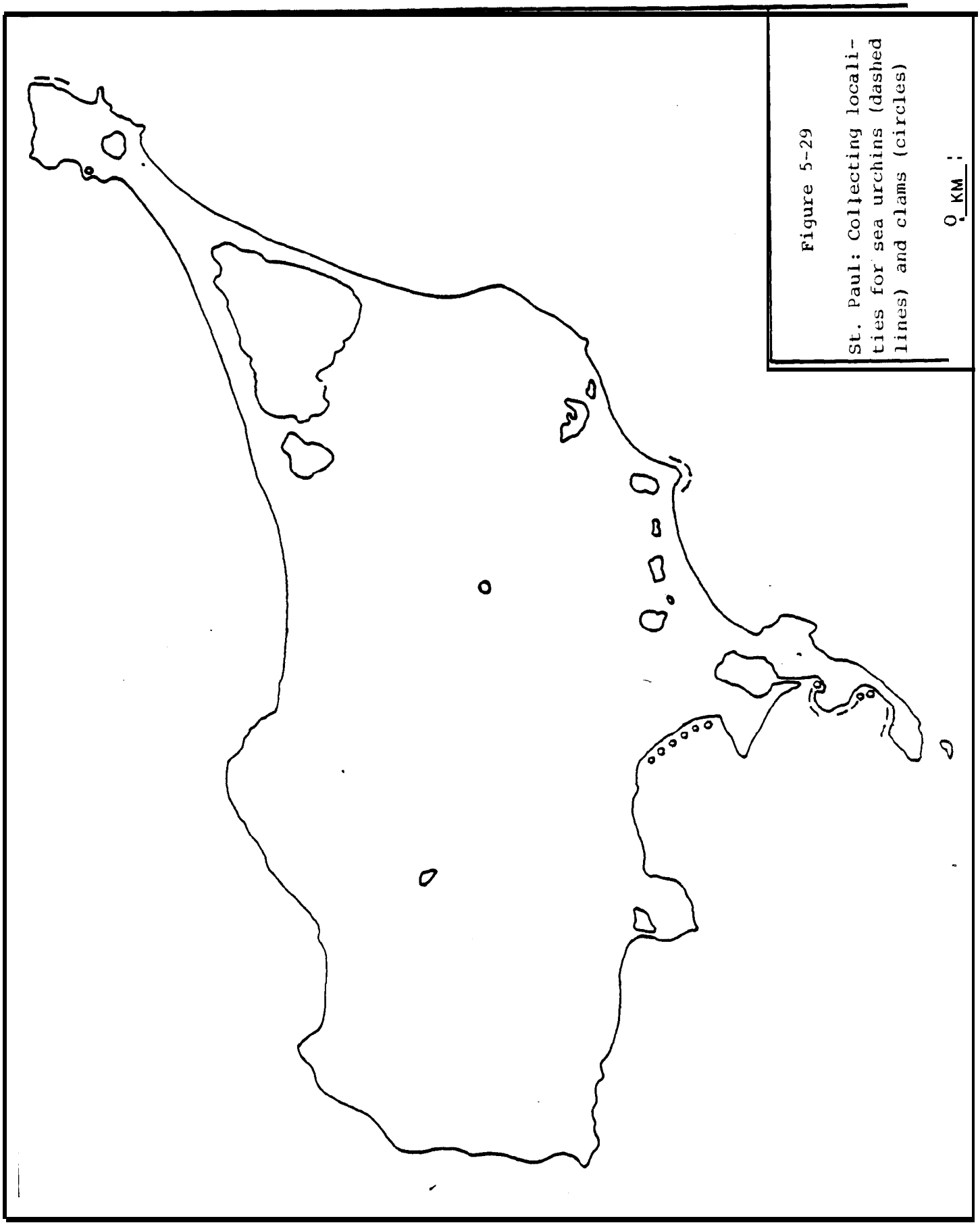

Figure 5-29

St. Paul: Collecting localities for sea urchins (dashed lines) and clams (circles)

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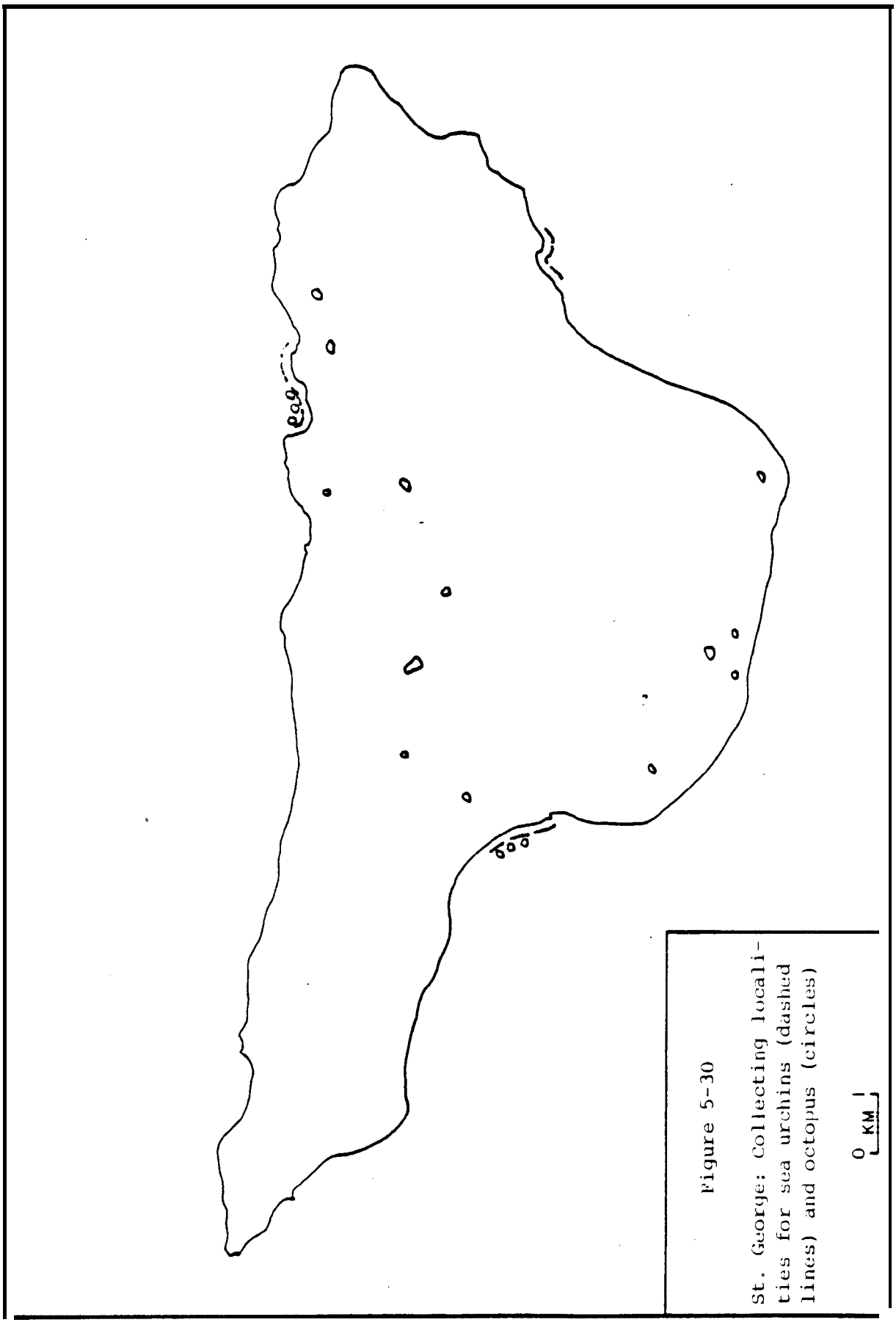

Figure 5-30

St. George: Collecting localities for sea urchins (dashed lines) and octopus (circles)

long pole with a scoop on the end. In both communities, the older people appeared to have the greatest interest in eating sea urchins. Finally, in both St. Paul and St. George it was reported that sea urchins are a good remedy for a hangover.

Clams, mussels, limpets, and chitons. While Elliott notes that most clams and mussels are virtually absent on both islands (1881:15) and that what mussels do exist- are small in both supply and number (1881:137), some very limited use of these'foods does take place today. On St. Paul clams can be found along the eastern side of English Bay and to both the north and south of the village (Figure 5-29). Although several decades ago clams appear to have been used more, it was estimated that no more than five people get them today.

On St. George, clams were reported by one informant to be available about 2 km west of the village, but are rarely, if ever, used today for food. Mussels, limpets, and chitons, likewise, are rarely used.

Crabs. Khlebnikov (1979:9) states that "a commonly used essential in food is a round crayfish, called the sea spider [i.e., crab]." Today, they are rarely obtained near the dock on the north side of St. Paul village and along the

coast in tire vicinity of St. George village (Figure 5-31). These crabs include the hair crab and blue crab.

Octopus. No documentary information concerning the use of octopus is available. Informants in both villages report that although this food was a delicacy sought after in former years, little effort is made to obtain them today. In St. Paul, the area around Reef Point and that around Whale Point (Figure 5-32) reportedly contain octopus, while on St. George octopus have been obtained in the area directly in front of the village and the shore of Zapadni Bay (Figure S-30).

Methods of catching octopus included putting kerosene soaked rags on the end of a stick into a suspected octopus hole to force the animal out. Octopus washed up on beaches after storms were also utilized, sometimes as fishing bait.

Sea cucumbers. On both St. Paul and St. George the occasional use of "sea footballs," probably sea cucumbers, was reported. These animals are obtained when they wash up on the shore after big storms. An informant on St. George stated that these "footballs" could be cleaned and eaten raw.

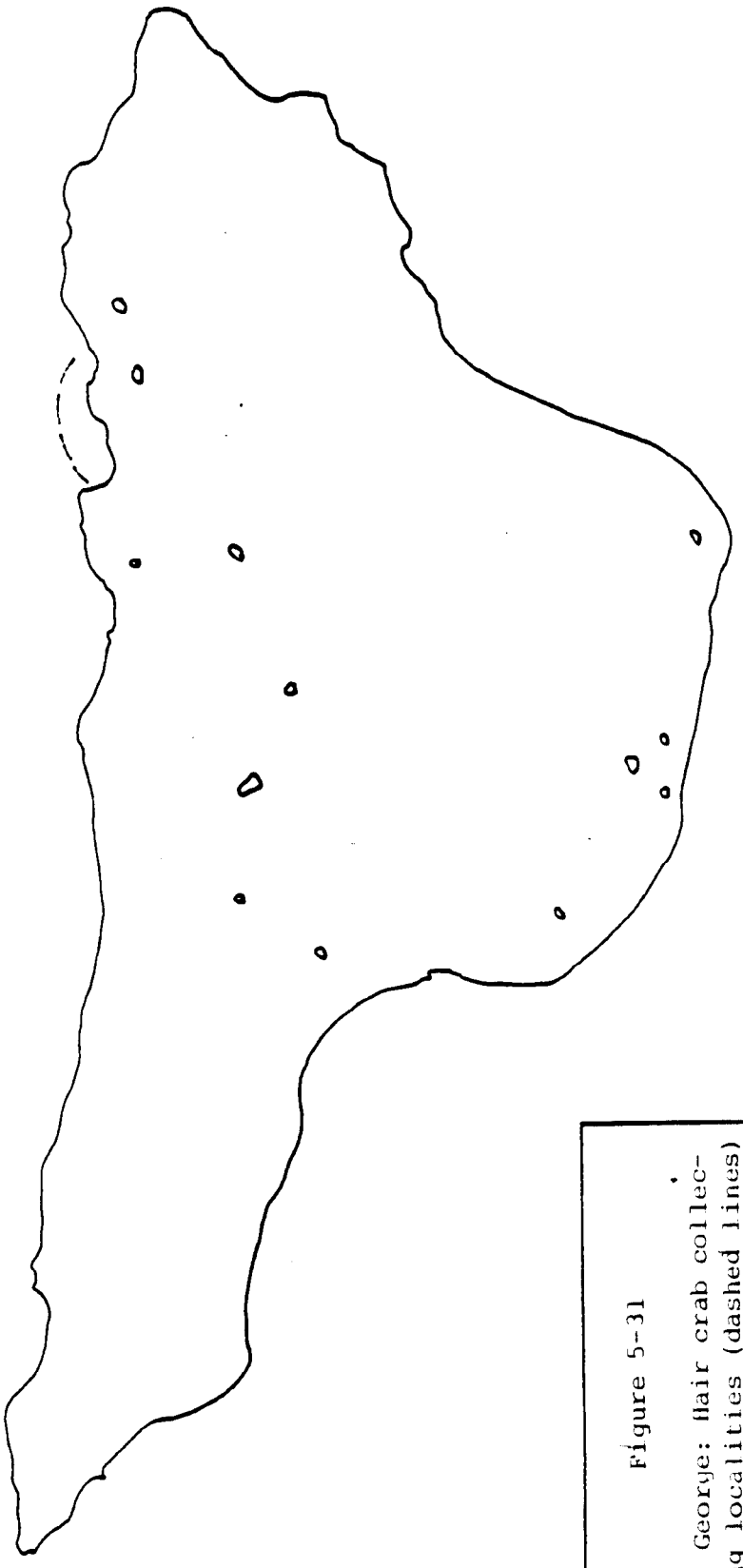

Figure 5-31

St. George: Hair crab collecting localities (dashed lines)

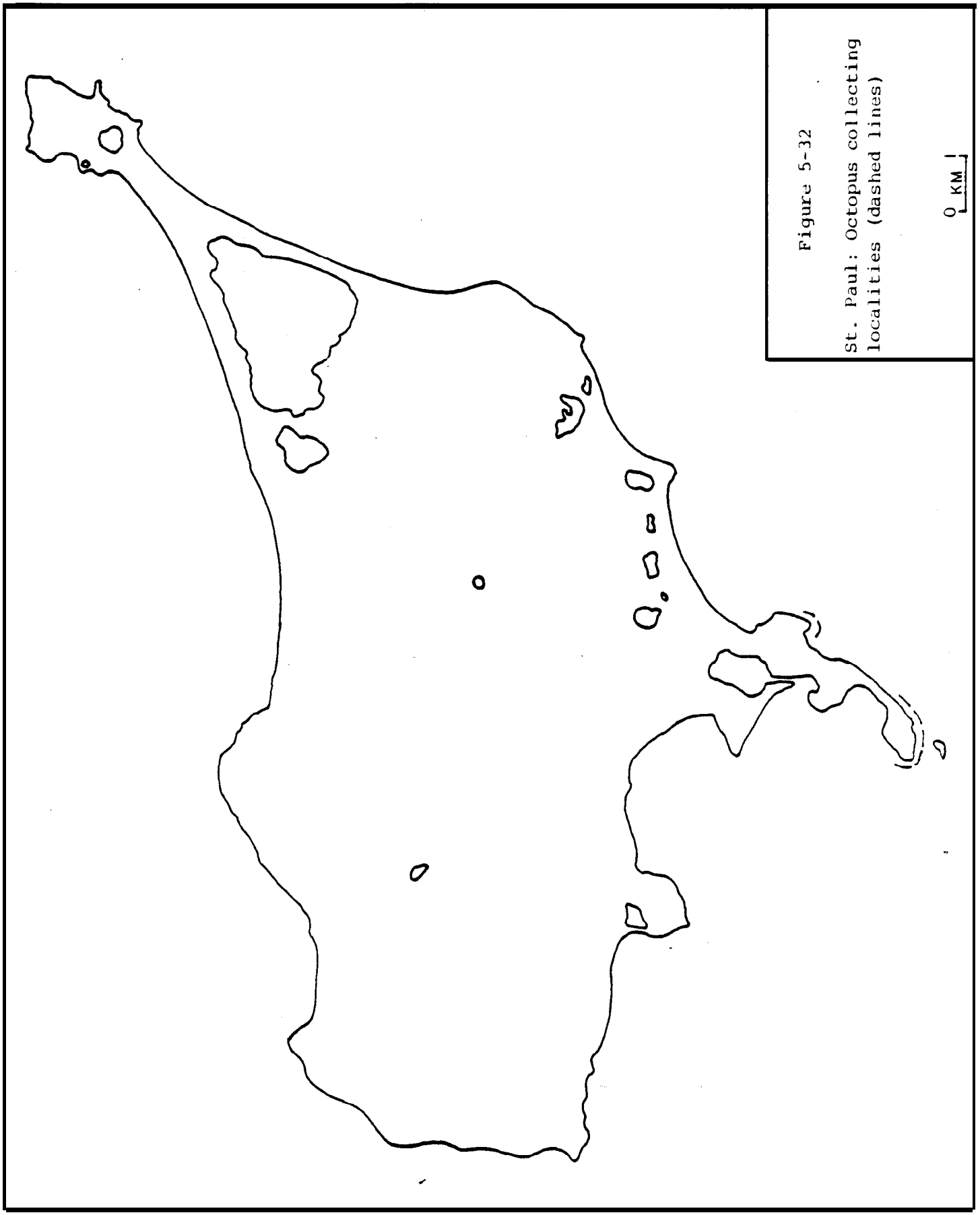

Figure 5-32

St. Paul: Octopus collecting localities (dashed lines)

16. Berries

Two, and possibly three, types of berries are found in the Pribilof Islands, but no documentation was found describing their use in the past. The crowberry, or mossberry, and the cloudberry are found on both islands. On St. George, an additional berry, a "raspberry," is reported.

St. Paul. Crowberries are found over much of St. Paul, but the areas indicated in Figure 5-33 represent those near the road systems, and, hence, those most frequently gone to. Cloudberries are much more limited in extent, with the primary collection area being north of Telegraph Hill at the base of a very rocky ridge (Figure 5-33). From August to October, berry collecting is a major activity, with groups of pickers over much of the island on nice days. Men, women, and children enjoy this activity. Some of the berries collected during these months are frozen and can last as much as two years. Berries can vary greatly year to year in abundance on both an island-wide or local basis.

St. George. As on St. Paul, many of the popular berry areas on St. George are close to the road system. Also, crowberries are more widely distributed than are cloudberries (Figure 5-34). A berry referred to as different than either the crowberry or cloudberry and called a "raspberry" is reportedly found in limited distribution east of the village. The picking season is identical to that on St. Paul, as is the widespread use of berries.

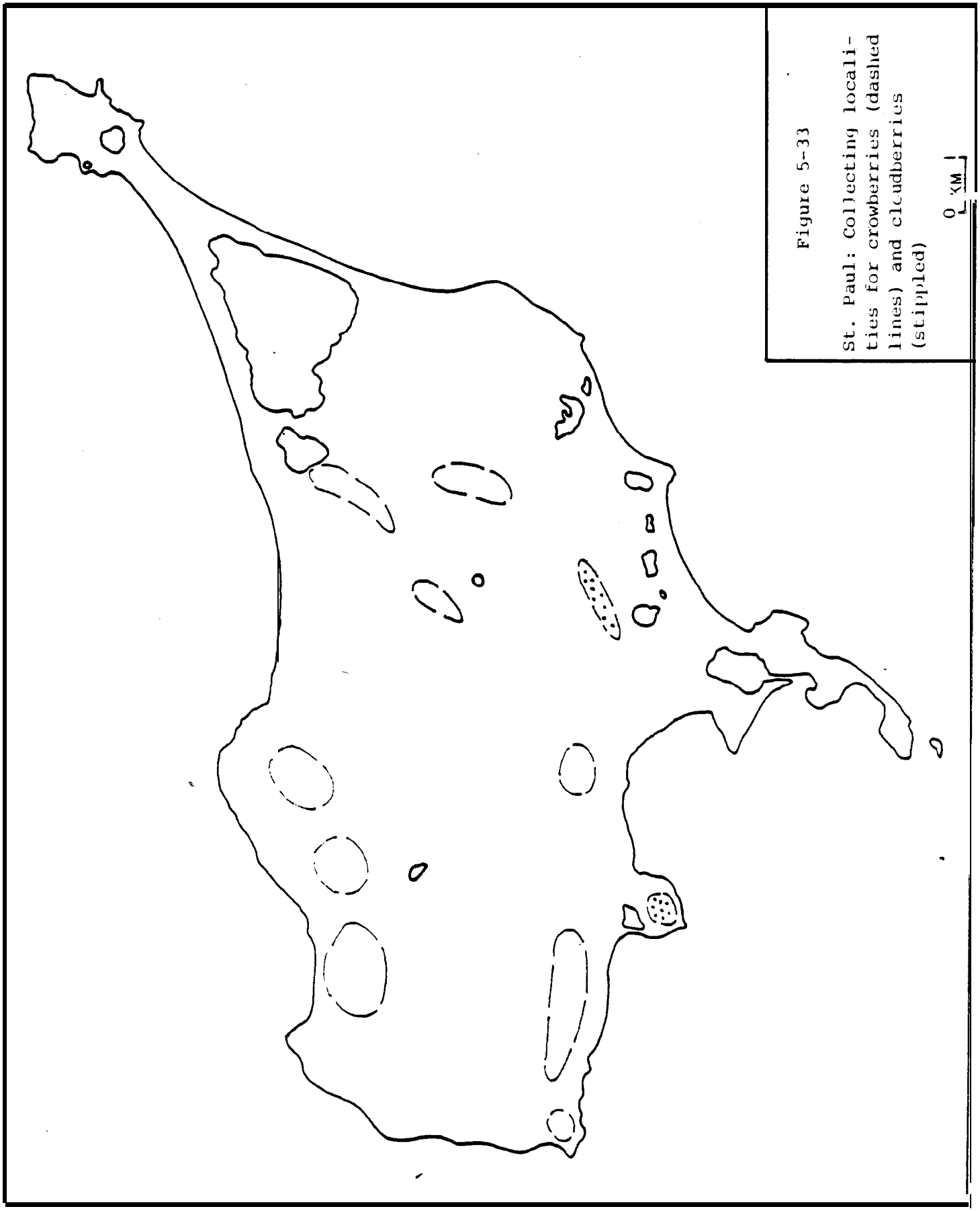
Figure 5-33
St. Paul: Collecting localities for crowberries (dashed lines) and cloudberries (stippled)
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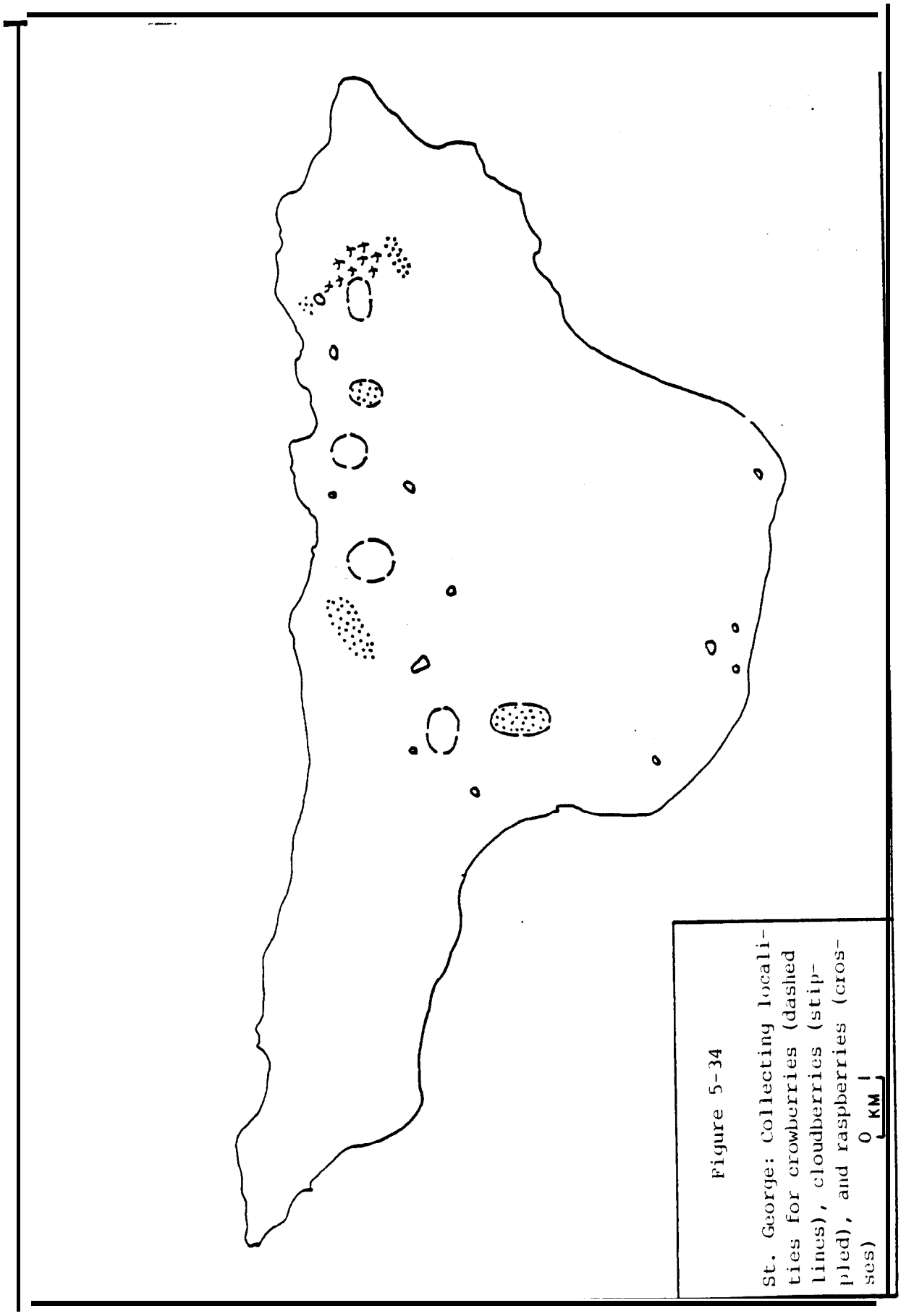

Figure 5-34

St. George: Collecting localities for crowberries (dashed lines), cloudberries (stippled), and raspberries (crosses)

17. Other plants

A variety of plants other than berries are, or have been, utilized for food, medicinal and manufacturing purposes. Little is reported from historical sources, however. Khlebnikov (1979:3) mentions several plants, although only the lupine is clearly identified:

> A yellow root with size and appearance resembling a carrot is nutritious and has a pleasant taste, but it is not always healthy. From excessive use one's eyesight is obscured and temporary blindness follows.. If the sick use it, having wounds (sores) on the body, they experience body fever and festered wounds (sores). Nevertheless, moderate use of it for healthy people is not entirely harmful. The root of the lupine, which is used for food, tastes bitter, but when boiled and leavened, it ferments and becomes pleasant, healthful, and very nutritious; it is used with meat. The root "chigilnik" is pleasant to the taste, healthful and nutritious. The turnip and potato bear and multiply, but very little.

Tikhmenev, writing in the 1860s, simply states that "many roots are gathered for food" (1978:409), and Elliott reports in the 1880s that "the chief economic value rendered by the botany of the Pribilov Islands to the natives, is the abundance of the basket-making rushes . . . which the old 'barbies' gather in the margins of many of-the lakes and pools" (1881:138).

Elliott also reports that the wild celery plants "are eagerly sought for by the natives, who pull them and crunch then between their teeth with all the relish that we experience in eating celery" (1881:12). He adds that from

fern roots and Gentian roots "the natives here draw their entire stock of vegetable medicines" (1881:12).

Those plants used or known by informants to have been used in the past include the following:

Wild celery. Called "pootchky" by residents of St. Paul and. St. George, this plant (Angelica lucida) may be found in many spots on the lower elevations of both islands. On St. Paul, popular areas for gathering wild celery are near Zapadni Point, Reef Point, and Northeast Point (Figure 5-35). The hollow stalk of the plant may be peeled and eaten raw, although it is possible to preserve the stalk by pickling, something done by at least one woman in St. George. In the past, wild celery was preserved in fur seal oil.

Wild rice. Although no people use this plant (Fritillaria camschatchensis) today, its use in the past is remembered. The small bulb consists of a number of rice-like kernels, which may be cooked or dried for later use. These plants occur very infrequently on the Pribilofs. Figure 5-36 indicates those areas on St. George where they are known to exist.

Sagebrush. Probably used more in the past than today, this plant (Artemisia sp.) was used as a beater in

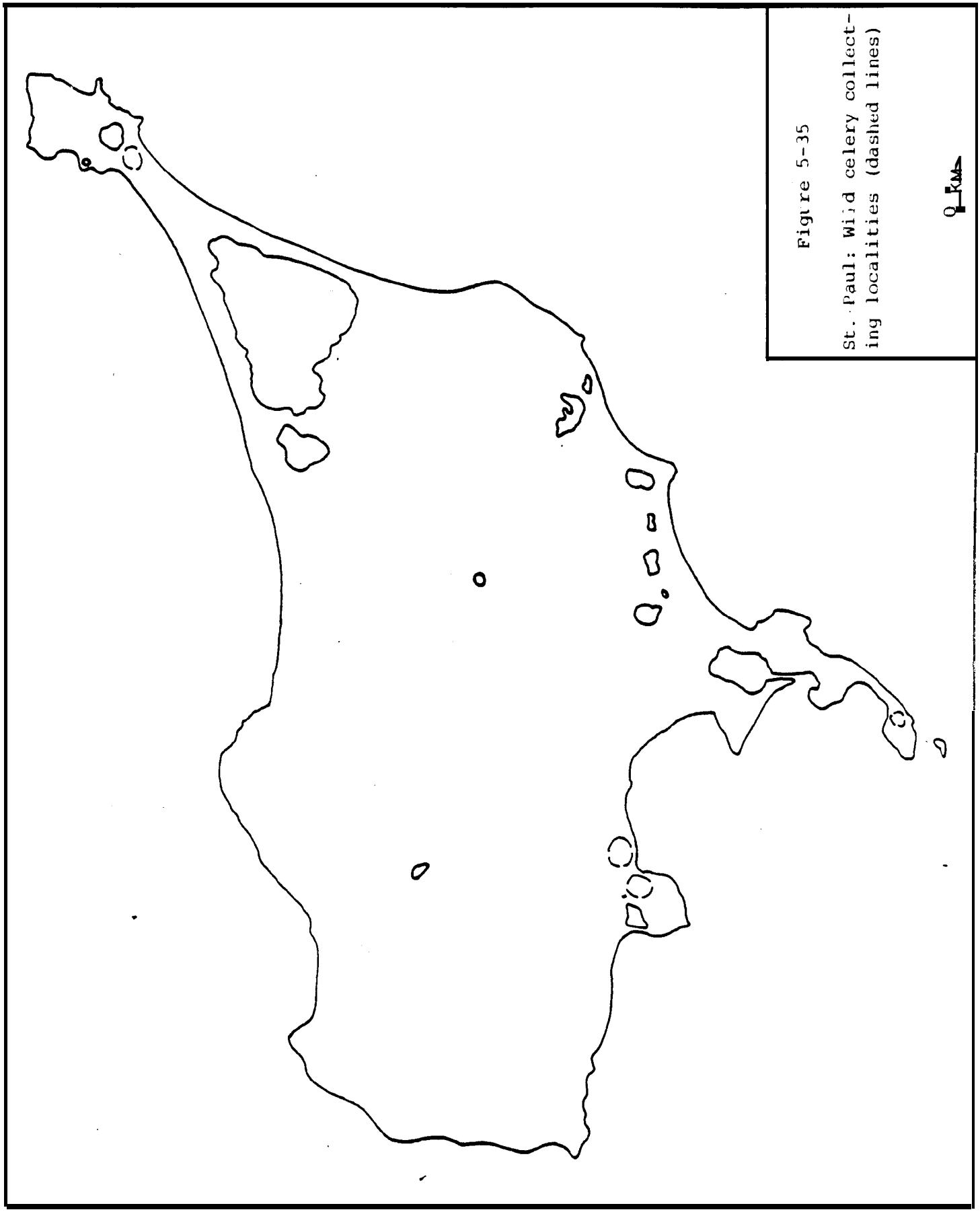
Figure 5-35
St. Paul: Wild celery collecting localities (dashed lines)
0 1 KM

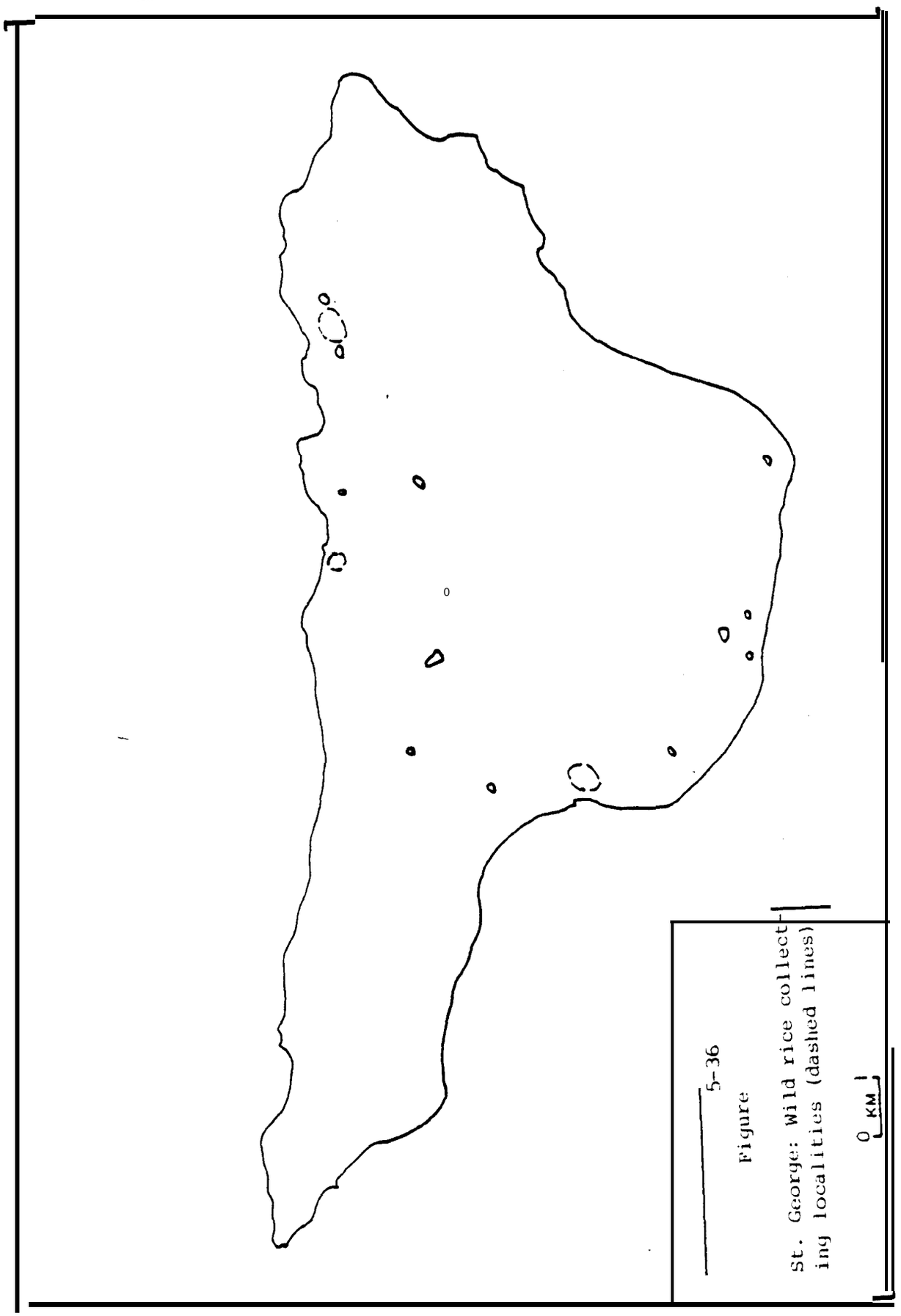

Figure 5-36

St. George: Wild rice collecting localities (dashed lines)

steambaths as well as a remedy for arthritis and an aid for stopping bleeding and cleaning wounds.

Yarrow. In the past this plant (Achillea sp.) was boiled to prepare a gargle for sore throats.

Wild parsley. This plant is gathered and boiled with seal meat. It is widely found on both islands.

Valerian. The root of this plant (Valerian capitata) is reported to have been used in the past to provide scent for halibut bait.

Kelp and seaweed. In the past, kelp was gathered along the beach and eaten raw or cooked. Today, very little use is made of this food item.

18. Poultry, livestock, and garaening.

Poultry, livestock, and gardening are grouped for discussion because they represent the use of domesticated plants and animals for subsistence purposes. (Reindeer were considered separately since they have largely been-unmanaged in the Pribilofs and differ little from caribou.) The history of these activities goes back to the Russian period, certainly, although little is documented. It is known that in Russian-America virtually "every post had small gardens and several cattle, pigs, chickens, and ducks and perhaps some sheep and goats" (Gibson 1976:96). For the Pribilofs during that period, Tikhmenev mentions that "a few vegetables are grown" (1978:409).

Describing conditions in the 1870s, Elliott thought that due to the climate it would be impractical to raise livestock with any profit, although he surmised that reindeer perhaps would do well if imported (1881:14). He states that chickens may be kept, but only if the Aleuts keep them in their houses during the winter. Regarding pigs, Elliott wrote (1881:14):

> The natives of St. Paul have a strange passion for seal-fed pork, and there are quite a large number of hogs on the island of St. Paul and a few on St. George. The pigs soon become entirely carnivorous, living, to the practical exclusion of all other diet, on the carcasses of seals.

Gardening, too, received Elliott's comments (1881:12):

> A great many attempts have been made, both here [at St. Paul] and at St. George, to raise a few of the hardy vegetables. With the exception of growing lettuce, turnips, and radishes on the island of St. Paul, nothing has been or can be done. . . . [On St. George, in one little patch of ground] . . . at one season there were actually raised potatoes as large as walnuts. Gardening, however, on either island involves so much labor and so much care, with so poor a return, that it has been discontinued.

Osgood et al. describes conditions in 1914 in a generally similar manner. They note that horses and mules have been used at various times in the past as draft animals, that cattle have been kept for milk and some beef for the non-Aleut government employees, and that sheep have also been raised (1915:127). They state that pigs, which have been kept for many years on both islands,

> . . . usually have the run of the village and the neighboring fields, where they secure a variety of vegetable food. The near-by killing fields are also drawn upon for a part of their subsistence. NO prejudice against pork produced from a diet of seal offal seems to have arisen in the minds of the natives, and perhaps has no just grounds for existence (1915:128).

Cats, according to Osgood et al., were introduced early on both islands, and that poultry, owned by both government personnel and Aleuts, furnishes a "fair supply" of eggs. However, "Many of the natives are obliged at this season [winter] to house their poultry in the attics of their own crowded homes, with results that may be‘imagined" (1915:128).

St. Paul. On St. Paul a number of households began growing vegetables in small greenhouses built adjacent to their homes in 1981. The village is also home to a few ducks and a mother goat and her newborn kid.

St. George. On St. George there are currently a few chickens, geese, and turkeys.

CHAPTER 6

SUBSISTENCE ISSUES AND CONCLUSIONS

Introduction

This chapter addresses a variety of issues relating to subsistence in the Pribilof Islands. The two sections that follow include, first, an enumeration of those factors which affect subsistence activities in St. Paul and St. George, and second, discussion of a host of diverse issues regarding subsistence.

Factors affecting subsistence activities

A number of factors exist which generally limit, but occasionally encourage, subsistence activities in the Pribilof Islands. They are as follows:

(1) Although the Russian Orthodox Church does not have specific rules regarding hunting, there is a strong tradition among the people to restrict their hunting and fishing activities at certain times. Included in these is Lent, when hunting is not conducted during the first, fourth, and seventh weeks. Fishing is not restricted to the same extent during this time, although during the week prior to

Easter (the seventh week of Lent) no hunting or fishing is done. The priests in St. George and St. Paul understand the need within their communities for hunting and fishing, however, and do not dictate to the people what they should or should not do in this regard. The priests are never allowed to hunt, although they may fish, and the community supplies them with hunted resources.

In addition to Lent, there are other church holidays throughout the year when the same basic restrictions apply. These restrictions are generally adhered to even by those community members who are not regular church-goers. The church requirement that no meat be eaten during the Lenten period means that fish is an important subsistence item at this time.

(2) U.S. Fish and Wildlife Service and Alaska Department of Fish and Game hunting, trapping, and fishing regulations are a potential limitation on subsistence activities. However, lack of local enforcement by these agencies, combined with their policies discouraging enforcement of regulations when subsistence activities which are not wasteful are involved, effectively result in relative freedom in subsistence pursuits for the Aleuts of the Pribilofs.

(3) The Fur Seal Act of 1966, and its implementing regulations (50 CFR 215), impose important limitations on the Pribilof Aleut subsistence economy. The fur seals are managed by the National Marine Fisheries Service of the U.S. Department of Commerce's National Oceanic and Atmospheric Administration. First, the taking of fur seals at times other than during the commercial harvest for any purpose is illegal. Since only subadult males are killed in the harvest, Aleuts are precluded from legally taking their traditional delicacy, pups, a great imposition as perceived by the residents of St. Paul and St. George.

Also restricted by the regulations is the use of firearms. From 1 June to 31 August it is prohibited to discharge or carry a loaded firearm on the islands (50 CFR 215.27). This restriction is designed to protect the seal herds from disturbance, and although sea lions are present (and often easy to shoot) during this time, it is illegal to hunt them because of the general prohibition on firearms.

Finally, landing on Otter and Walrus Islands is prohibited (50 CFR 215.25). These islands were designated as bird reservations by Executive Order 1044, dated 27 February 1909.

(4) Various natural factors limit subsistence activities in the Pribilofs. Many of the animal species which are

utilized are present, and therefore may be hunted, during only part of the year. Weather, with severe storms, and frequent fog and wind, limits greatly the time available for almost all subsistence pursuits, especially fishing. Finally, the geography of the islands, with long stretches of steep coastal cliffs having almost no natural harbors, makes boating as well as onshore coastal hunting difficult. These factors require that hunters and fishers have detailed knowledge of local terrain and ocean conditions. Also, hunters must be knowledgeable about the physical and behavorial characteristics of the animals sought. Becoming skillful in subsistence pursuits, therefore, is a lifelong process comprising "on the job training" as well as the sharing of information among community members.

(5) Related to the natural limitations described above is that of accessibility to various parts of the island by land. While in the past the only means of overland transportation was by foot, today vehicles are used for almost all travel. On St. Paul, where the road system is extensive, the areas used for subsistence purposes are correspondingly numerous and widespread. On St. George, on the other hand, roads extend only from the village to East Rookery and from the village to Staraya Rookery and to Zapadni Bay, and most subsistence activities dependent on land travel take place in these areas. The introduction on St. Paul and St. George in recent years of 3-wheelers, which

are capable of traveling over rough trails, has resulted in increased travel to parts of both islands where relatively few people ventured previously. On St. George particularly, it may be speculated that with increased use of such all terrain vehicles. subsistence use of resources on those portions of the islands not serviced by roads will increase.

(6) Employment influences the level of subsistence activities. With employment cutbacks in the Pribilofs and continually rising prices, reliance on subsistence resources is increasing and can be expected to continue to become more important. A "dramatic" change in the percentage of the diet made up of subsistence foods had been noticed by one community leader in St. Paul, from an estimated 30-40% two to three years ago to 50% this year. This increase is generally across the board, although halibut seems to be gaining greater relative importance (perhaps due to an especially good halibut season this year). The increasing importance of subsistence foods is also reflected in decreased spending at the community'store in St. George. The percentage of the diet from subsistence foods in St. George was estimated by several individuals to be in the neighborhood of 50%.

It appears that in a general sense there exists an inverse correlation between the level of use of subsistence foods and the overall financial well-being of St. Paul and St. George. However, the fact that there appears to be a

significant number of men who combine full time jobs with an active pursuit in subsistence endeavors suggests two related points.' First, it makes it clear that full time employment and subsistence are not mutually exclusive pursuits or value orientations: an individual may participate In both.

Second, it points out that one's ability to engage in subsistence pursuits may be based in part on his ability to support financially those activities. That is, a contemporary subsistence economy necessarily is dependent on a cash economy, and those persons with reliable cash incomes are most likely able to participate most heavily in subsistence pursuits. Additionally, persons without a substantial cash income of their own, but supported financially by friends or family members, may also participate heavily in subsistence pursuits. These possibilities suggest avenues for future research.

A final point in this regard is that employed persons are limited by their work schedules in the time they can spend at subsistence endeavors. Unemployed persons, on the other hand, have greater freedom to take advantage of good weather, the presence of game, etc.

Related subsistence issues and conclusions

The following points represent a wide range of issues pertaining to Pribilof subsistence:

(1) While Aleut subsistence utilization patterns have changed somewhat over the years of Pribilof Islands occupation, and subsistence procurement technology has in many cases changed dramatically (e.g., from the use of baidars to aluminum skiffs for fishing), the current subsistence economy represents a fundamental continuation of a traditional precontact and postcontact subsistence lifestyle. This lifestyle includes aspects not only of food inventory and procurement, but also of food sharing, use, and ideology. In both St. Paul and St. George, the entire Aleut population makes use of a variety of subsistence resources, and through a network-of sharing, even households with no active hunters or fishers obtain a regular supply of subsistence foods. Although the amount of such food varies from household to household, everyone expressed enthusiastically the great importance of subsistence as an , integral part of contemporary life.

Although in past years Aleuts have suffered ridicule from teachers and government agents concerning their food habits, today people are proud of their subsistence heritage, and even the schools are promoting increased cultural awareness among the children. Hunting and fishing are common topics of conversation among the entire population, and the following quotation from Larry Merculieff's testimony to the Subcommittee on Asian and Pacific Affairs in 1979 eloquently

and accurately describes the importance of subsistence hunting (Merculieff 1979:9-10):

> No meat from a hunt is wasted and the hunters never take more than is needed. We do not sport hunt because the thought of killing an animal for fun and recreation is totally abhorrant to us. All life is viewed as precious and not to be taken in such a frivolous manner. Such respect for wildlife assures us, that they will be available for our coming generations. . , .
>
> We practice environmentalism, we don't preach it. We do not take birds for food when they are nesting, we don't take animals without necessity, communally we harshly condemn wanton killing of any wildlife: we make sure our young children do not molest the wildlife or tear up the delicate tundra with motorcycles. We do not hunt sea lions when the seals arrive for fear of disturbing the seals. . . . Everyone . . . can learn from us what it takes to work with nature . . . .

The social components of subsistence are seen in widespread cooperation among hunters and fishermen in obtaining their foods. Children, in their hunting of least auklets, for example, learn and enjoy the value of cooperation in subsistence activities. And, as mentioned above, sharing ensures that all community members have the food they need. Larry Merculieff writes as follows (1979:9):

> There is a special distribution system used to distribute meat taken for subsistence. If an elderly hunter is present during the butchering of large animals, he gets first choice of parts if he is related to the hunter who got the animal, or he is given second choice if he is not related. The meat is then distributed to any remaining members of the hunting party. The individuals then redistribute their take amongst elderly and relatives of the villages. The quantity and type of meat given depends on need and order of relation to the hunter. This process assures that no one goes hungry.

In the ideological sphere, precontact beliefs and ceremonies regarding animal spirits and the placation of game have been integrated into and in part replaced by the beliefs and practices of the Russian Orthodox Church. While church tradition limits subsistence activities at certain times, it also is intimately involved with those enterprises. At the start of the halibut season on St. Paul, for example, the priest blesses the fishing boats, and prior to the sealing season he also blesses the workers and the harvest.

(2) Historically there has been great attention paid to the study of fur seals, to the mechanics of the fur seal industry, and to the financial pros and cons of the enterprise. In the volumes of publications regarding fur seals, the sealing industry, and'the Pribilof Islands, relatively minuteconcern has been shown towards understanding Aleut culture on the islands, including the realm of subsistence.

Such bias, or lack of understanding, concerning a cultural view of subsistence is embodied in various documents, but the equation of "subsistence" with "meat" is nowhere more clear than in the Interim Convention on Conservation of North Pacific Fur Seals, an international agreement which formed the North Pacific Fur Seal Commission. The duties of the Commission are, in part, to [Convention, Article V, Section 2(d)]:

> . . . recommend appropriate measures Lo the Parties on the basis of the findings obtained from the implementation of such coordinated research programs, including measures regarding the size and the sex and age composition of the seasonal commercial kill from a herd and regarding a reduction or suspension of the harvest of seals on any island or group of islands in case the total number of seals on that island or group of islands falls below the level of maximum sustainable productivity: provided, however, that due consideration be given to the subsistence needs of Indians, Ainos, Aleuts, or Eskimos who live on the island where fur seals breed, when it is not possible to provide sufficient seal meat for such persons from the seasonal commercial harvest or research activities . . . . .

Such a narrow view of what subsistence encompasses clearly has influenced National Marine Fisheries Service policy in the Pribilofs. The St. George moratorium and the yearly allowance of 350 seals were certainly not based on primary concern for Aleuts (see discussion below). The residents of the islands today are very much aware that they have long been considered second in importance to the seals, and they believe that they deserve some of the concern that has traditionally been shown to the animals.

(3) The sealing moratorium on St. George and the limit of 350 animals per year for subsistence use is a major concern to the people of that community. The main issues may be summarized as follows:

(a) Almost everyone feels that 350 fresh seals per year is not enough for the community, and that there is

actually some competition among people to get the limited number of best parts from the killing ground. Estimates of 1000 or more are generally offered as the number that should be allowed to be taken.

(b) Coupled with the first point is the dissatisfaction expressed with the system of providing meat from the St. Paul harvest to St. George. Although things have improved over the past several years (as discussed in Chapter 5), people find the frozen meat sent to the village to be less desirable than meat freshly killed.

(c) A great deal of personal and community satisfaction is derived by St. George residents in obtaining their own meat from their own seals, and suggestions for improving the limited harvest situation included the idea that some kind of household quota system be implemented, whereby the number of seals could be regulated, but fresh meat could be obtained when necessary. This would, of course, be coupled with an increase in the present quota of 350.

(d) There are currently bad feelings on the part of many St. George residents towards the National Marine Fisheries Service biologists who come to the island each summer to study the dynamics of the fur seal population. Since people are dissatisfied with the present moratorium, interaction between the two groups is generally cool.

(e) According to a National Marine Fisheries Service scientist, it has long been considered highly unlikely that the St. George commercial harvest will ever be resumed. From talks with community residents, however, it is apparent that people lack this clear understanding, and instead look forward to resumption of the harvest. Such a disparity in viewpoints must certainly represent a shortcoming on the part of the Fisheries Service to make a serious effort to share its information and opinions with residents of the island.

(f) Finally, the meat sent over from St. Paul to St. George is technically property of the Tanadgusix Corporation, since it has rights to dispose of the carcasses once the skins have been removed on the killing grounds. Therefore, that corporation is taking a certain financial loss by providing meat to St. George, since it is-not compensated by the Fisheries Service for the meat thus used. While Tanadgusix has no intention of halting its contribution, this situation is further evidence of the spectrum of hardship and difficulties which the moratorium has engendered.

In conclusion, the fur seal is unique in that it is a totally predictable resource from a subsistence point of view. While other resources fluctuate yearly or are dependent on weather conditions, etc. for their procurement, the fur seal has always been, and will always be, the backbone of Pribilof subsistence. In light of this, the restricted

St. George harvest of 350 seals per year is clearly a burden on the community.

(4) While it is not possible to obtain precise quantified data concerning the level of use of each subsistence resource, the approximate degree of use of most items or categories of items was elicited from informants. Thus, a rank ordering of the major subsistence resources in the Pribilofs, from the most to the least utilized, is as follows: On St. George: fur seal, halibut, birds and eggs, sea, lions. On St. Paul: fur seal, halibut, sea lion/reindeer, birds and eggs. Table 6-l summarizes the subsistence activities of St. Paul and St. George according to food item and time of year. Late winter is generally a time of less subsistence activity, but the rest of the year, especially the spring and early summer, witnesses a diversity of subsistence pursuits. Table 6-2 presents the Aleut names for selected subsistence resources.

(5) Because the subsistence resources upon which Aleuts depend are parts of dynamic natural systems which fluctuate from year to year, subsistence utilization patterns will also vary over time. Examples of resource variation mentioned in Chapter 5 include sea lions and halibut. With this in mind, it is clear that no one year will be truly representative of Aleut subsistence patterning, and, further,

TABLE 6-1:--Subsistence activities by resource and time of year

Subsistence Resource	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Fur seals						++++++						
Sea lions	+++++++++++++++++++++--								-----+++++++++++++			
Hair seals	------------------------								-- ----------------			
Halibut					---+++++++++++++++----							
Cod*					--+++---------------							
Murres			--++++++--									
Murre eggs						-+++-						
Kittiwakes				--++++++--								
Lake ducks			--++++++--						--++++--			
Sea ducks	+++++++++++++++--										---++++	
Cormorants*	+++++++++++++---										--++++	
Least auklets				-++++-								
Least auklet eggs*					-+++-							
Reindeer**	-----								-++++++++		---------	
Sea urchins	+++							--++++--				
Wild celery						+++++	---					
Berries								-+++++++--				

+Primary procurement period
-Secondary procurement period

*Primarily in St. George
**Only in St. Paul

TABLE 6-2: --Selected subsistence items and their Aleut names

Subsistence Item	Aleut Name
Sea lion	Qawax̂
Fur seal	X̂ulastakax̂
Hair seal	Iisux̂
Red-legged kittiwakes	Qag̊ayax̂
Black-legged kittiwakes	Ĝiidax̂
Least auklet	Chuchiix
Cormorant	Ag̊yux̂
Murre	Sakitax̂
Mallard	Aniimsaa
Eider	Qisimax̂
Murre eggs	Sakitam samla
Least auklet eggs	Chuchig̊um samla

SOURCE: Fr. Michael Lestenkof, St. Paul.

that such patterning might best be viewed itself as dynamic--an economic/cultural system operating over time.

(6) An important factor affecting subsistence in the Pribilofs is food storage and preservation for future use. In the days prior to refrigeration, meat-primarily fur seal—which was not eaten fresh was either salted or dried. Today, although some meat and parts such as flippers are salted, most meat and fish not eaten fresh is frozen. In both communities, the National Marine Fisheries Service provides lockers in large freezer units for rent. Measuring approximately 3x3x3 feet, these lockers rent for $27 per year on St. Paul and $22 per year on St. George. There are enough lockers for anyone wanting one, and some families rent two, but a number of families also have their own household freezers.

Freezers make it possible for families to stock up when important resources are available. Fur seal and halibut are chief among those items frozen, seals being available only during the summer, and halibut available only on good fishing days during the spring and summer. Some Pribilof residents suggested that if more freezer space were available, even greater quantities of subsistence resources would be stored.

(7) Food prices at the stores in St. Paul and St. George are, of course, higher than Anchorage. Table 6-3 presents a comparison of prices on selected items. For those items in the table, St. Paul prices are 29.7% higher than those in Anchorage, and those in St. George are 43.7% higher. The St. George store orders the bulk of its food from Seattle and applies an across-the-board 70% markup for retail sale. This covers freight, salaries, overhead, and profit.

A few residents of St. Paul have formed a food co-op, from which they report both satisfaction in merchandise as well as cost savings. This type of buying could have significant impact on the purchasing power of the Pribilovians if it becomes popular, although it could also have an adverse effect on prices at the local stores. Some people also order food on an individual basis from Anchorage.

(8) One of the more interesting aspects of subsistence in the Pribilofs is the exchange of various resources with people elsewhere. Elliott (1881:75) describes such exchange over 100 years ago:

> A few of [the Aleuts], in obedience to pressing and prayerful appeals from relatives at Oonalashka, do exert themselves enough every season to undergo the extra labor of putting up a few barrels of fresh salted seal meat, which, being carried down to Illoolook [the Unalaska settlement] by the company's vessels, affords a delightful variation to the steady and monotonous codfish diet of the Aleutian islanders.

TABLE 6-3:--Prices of selected groceries in St. Paul, St. George, and Anchorage

Item	St. Paul	St. George	Anchorage
Ground beef, per' pound	$2.99	$ 2 . 9 5	$1.39
Round steak, per pound	3.90	4.89	3.29
Pork chops, per pound	2.40	4.53	2.89
Bacon, per pound	3.32	2.70	2.48
White bread (22 or 24 oz.)	1.51	2.00	1.19
White flour, 10 pounds	4.20	3.85	2.29
Sugar, 5 pounds	3.35	4.70	2.65
Corn muffin mix, 8 1/2 oz.	.40	.40	.35
Rice-a-Roni	1.02	.95	.79
Corned beef hash, 15 1/2 oz.	1.75	1.80	1.59
Red apples, each	.30	.40	.30
Sharp cheddar cheese	2.24	1.90	1.77
Tomato soup, 10 3/4 oz.	.43	.45	.41
Canned kernel corn, 17 oz.	.75	.80	.59
Eggs, dozen	1.53	1.60	.89
Aluminum foil, 75 ft^2	2.10	1.75	1.95
Totals	$32.19	$35.67	$24.82

Today, trade takes place with relatives and friends, most often in Anchorage and in villages on the Aleutian chain. As salmon is absent in the Pribilofs, it is a favorite item to receive. Both smoked and salted salmonare sent to St. Paul and St. George in exchange for halibut, which is sent frozen, and fur seal meat and flippers, which are sent frozen or salted. Other items, such as sea lion and ducks, are also sent out from the Pribilofs. Between the two villages, reindeer is sometimes sent to St. George, while cod and berry products are occasionally sent to St. Paul.

This system of exchange may be viewed as an extension of patterns, of sharing present within each village, as long distance trade serves to maintain social ties with people far away as well as to distribute valued resources.

(9) The locations of the villages of both St. Paul and St. George since initial occupation in the 1700s have been determined exclusively by the transportation and harbor requirements of the fur seal industry. On the other hand, camp houses, which have existed at various locations over the years, have always been associated with subsistence resources. Figures 6-l and 6-2 indicate the cabins currently used on St. Paul and St. George, respectively. In addition to their value as "get-away" spots, these camp houses are each situated in an important subsistence area, as comparison of

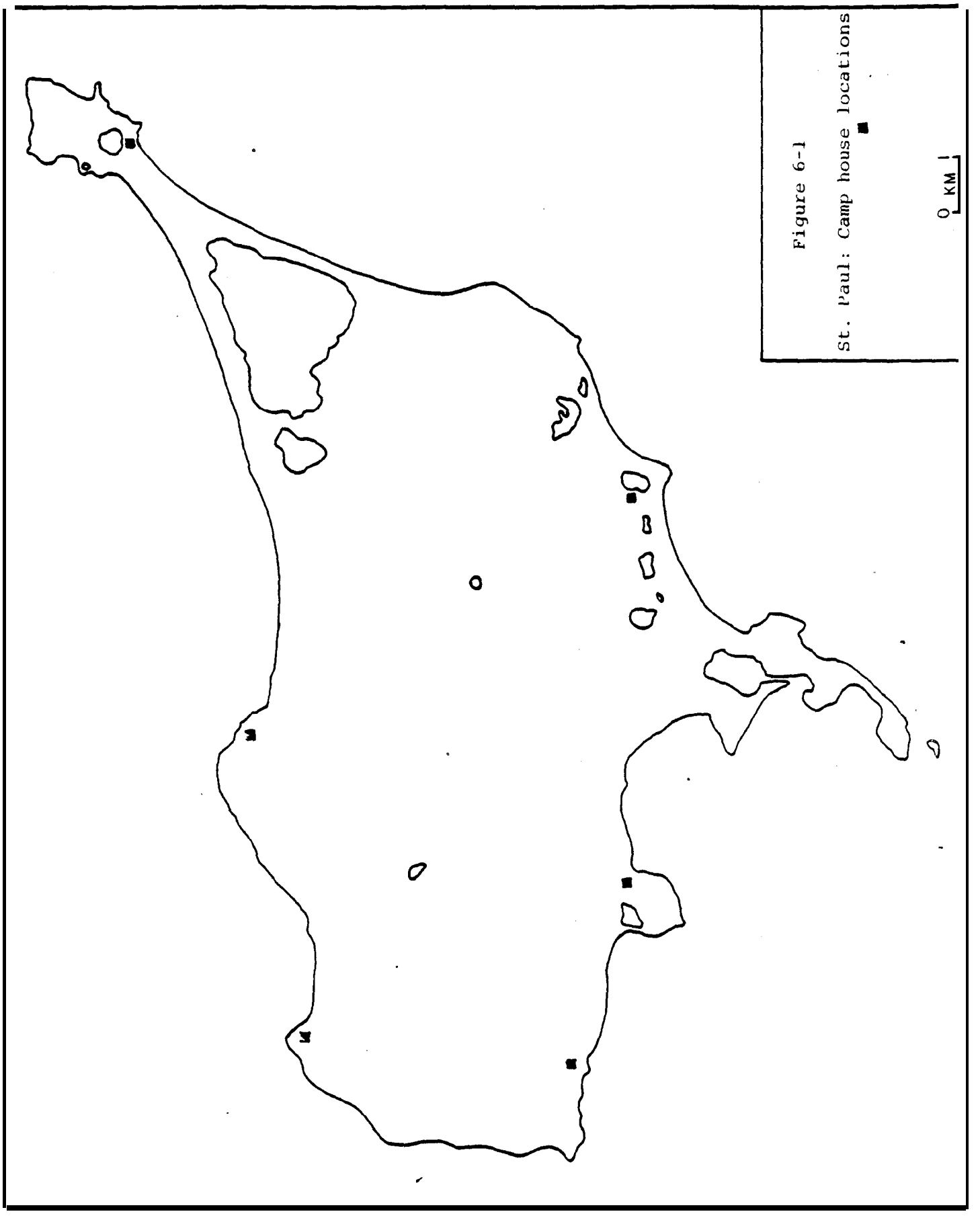
Figure 6-1
St. Paul: Camp house locations
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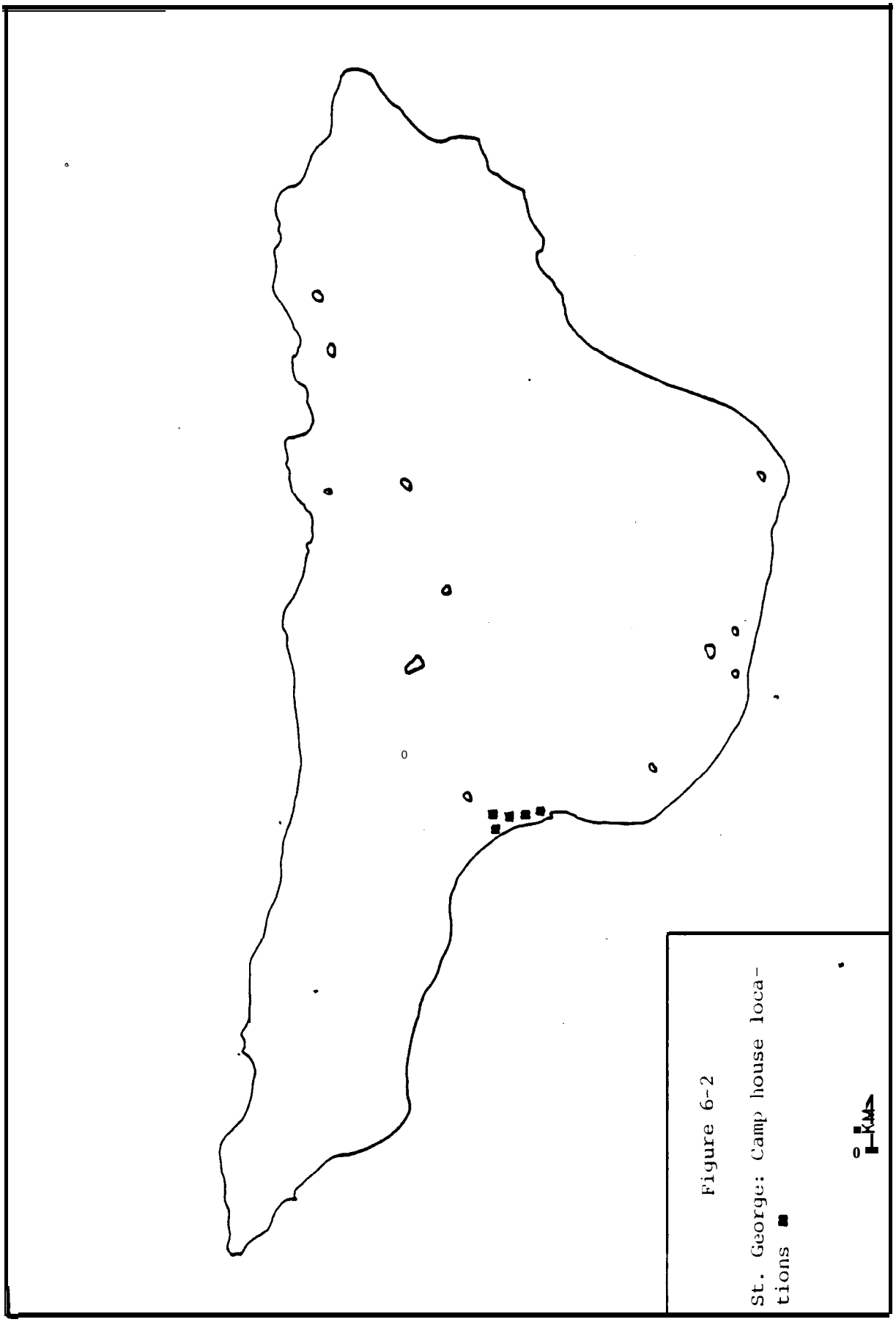

Figure 6-2

St. George: Camp house locations ■

these maps with the subsistence resource maps in Chapter 5 will indicate.

On St. Paul, cabins are used for both day outings and extended stays. The' cabins, except for that at Northwest. Point, are privately owned, but permission is generally granted to those requesting use. The Northeast Point camp house is available to all to use; some people camp there for a week at a time in winter for sea lion and duck hunting. The city takes coal, left over from earlier days, to each of the camp houses each‘year. On St. George the camp houses are all privately owned, and overnight stays are not common.

(10) Most subsistence pursuits in St. Paul and St. Georqe are undertaken by the young and middle aged males, although some older men and some women do participate in various activities. There do not appear to be any prohibitions on women huntinq or fishing, but traditional family and household obliqations limit the involvement of most women in the acquisition of subsistence foods. Women do, however, have the primary responsiblity in preparing fish and game for eating and storage once these items are brought home.

(11) Subsistence resources appear to be utilized to a somewhat greater degree per capita on St. George than on St. Paul. This may 'be due to a variety of causes, including but not limited to the narrower range of employment

opportunities on St. George and to a history of generally less outside contact on St. George.

(12) A few handicrafts utilizing subsistence resources are manufactured in the Pribilofs today. These include baskets and model baidars (made with seal throat), jewelry (made with seal teeth, fossil ivory, and reindeer antler), and some articles of clothing (made or trimmed with fur seal fur).

(13) A high degree of consistency among informants was noted during the course of field research on this project. Although information obtained from informants was not shared with other informants, there was general agreement on such items as the time of year of various activities, the locations of those activities, and how much of each item was obtained. This may likely be attributed to the relatively small islands on which they live, and the ability of most persons to learn a great deal about their surroundings. This insular situation may, perhaps, be contrasted with subsistence in an interior Alaskan setting, where activities may be undertaken over a broad territory or area (with different hunters, trappers, or fishers going in as many directions), rather than along a basically longitudinal coastline having fewer subsistence locales. This is a proposition that could be tested through future research.

(14) Research on Aleut place names of St. George was begun during this project, but was much too time consuming to pursue to completion. It is very possible that future research on this subject (including place names on St. Paul) could provide valuable insight into the history of subsistence activities on the Pribilofs.

(15) The Corps of Engineers is currently studying the feasibility of building boat harbors on both St. Paul and St. George. Various options exist for these projects, but the St. Paul facility has the potential to be a major port for the Bering Sea region. On St. George a breakwater is planned, primarily for use by local residents in small craft.

Generally, residents are supportative of these projects, which they feel will improve the economic situation. On St. Paul people are concerned that a substantial port may result in an influx of people that will strain local facilities, and they are worried about other local impacts such as noise and pollution. Consequently, the community may, in fact, push for docking facilities of lesser scope more in tune with its desires for more moderate village growth and development.

(16) Related in part to harbor facilities is the issue of OCS development in the Pribilof Islands region.

While the economic benefits of such‘ development are realized by many residents, they are nevertheless generally wary, and express a desire to maintain their villages as they now are. St. Paul had a taste of possible future problems in the fall of 1979, when a Japanese ship ran aground a short distance from the village and spilled oil into the sea. The oil made its way into Salt Lagoon, affecting bird populations there, and some residents state that oil still seeps from the sands of the. lagoon. Were a large spill to occur during the summer months, when seals and birds are present in their greatest numbers, the results could be severely damaging to the commercial and subsistence economies of the islands. Hunt (1976:101) states that

> . . . it appears that most of the birds nesting on St. Paul Island forage relatively close to the island. If subsequent cruises confirm this impression, then oil spilled within a zone 30-40 miles around an island will create an extremely serious hazard to sea birds breeding on that island. Note of this zone of extreme vulnerability of nesting birds to oil should be taken in any decisions concerning permits for drilling or transporting oil.

Also related to OCS as well as other large scale development is noise and its effect on animal populations. Increased shipping and air traffic could certainly affect the fur seal herds, and Hunt (1976:66, 99, 101) noted that both fixed winq and helicopter aircraft easily disturb cliff birds.

(17) Commercial halibut fishing on St. Paul was begun on a trial basis by the Tanadgusix Corporation during the summer of 1981, and it is certain to continue on an expanded basis in years to come. The waters around that island, expecially to the north, are known to be rich in halibut, and if this venture proves feasible, it could provide substantial income for many residents. As it now stands, the Tanadqusix Corporation owns two fully equipped fishing boats, and villagers fishing from private skiffs sell their catch to Tanadgusix, which in turn ships it to Anchorage.

The feasibility of a hair crab industry on both St. Paul and St. George has been studied in recent years, although no activity has yet begun on a commercial scale.

(18) The reindeer herd on St. Paul is currently not managed, although a managed herd could perhaps increase to 1200-1500 animals (Foote et al. 1968:156). On St. George, reindeer were reintroducted to the island in 1980, although subsistence and/or commercial benefits are many years in the future.

(19) The St. Paul Tanadqusix Corporation now operates the fur seal by-products plant, as described in Chapter 5. This plant was at *one* time part of the government sealing operation on the island and now represents a partial take-over by the local corporation of the island's fur seal

business. While the future of the National Marine Fisheries Service's Pribilof Program is itself uncertain, it is possible that the entire fur seal enterprise may someday be taken over by the village corporations on the Pribilofs. Standing in the way of such a change, however, is the fact that the Fisheries Service provides valuable public services (such as electricity generation) and jobs, and it would be difficult and costly for the local St. Paul and St. George organizations to assume these responsibilities. On the other hand, it is felt by some that the biggest threat to continuation of the harvest is the government's involvement, since protestors often focus on the use of federal tax dollars to support the program.

(20) The U.S. Fish and Wildlife Service has negotiated with the St. Paul Tanadgusix Corporation, the St. George Tanaq Corporation, and the regional Aleut Corporation to transfer much of the coastal portions of those islands which comprise the bird nesting cliffs and to make them the Pribilof Islands Subunit of the Alaska Maritime National Wildlife Refuge. In exchange for this land, the corporations will receive financial, land, and contractual reimbursements.

Of interest in terms of subsistence is Section 6(c) of the agreement, which reads in part as follows (U.S. Department of the Interior 1980):

> It is the intention of the parties that the traditional use by residents of St. Paul and St. George will not be affected by this exchange; provided, however, that the regulation of subsistence use on Wildlife Refuge lands shall be governed by the aforementioned Memorandum of Understanding [which concerns the resolution of any questions through a Joint Management Board consisting of local and federal representatives].

This agreement has not yet been entered into, and it will be of interest to see the manner in which subsistence is affected, if at all, by it.

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