A STUDY OF TRADITIONAL USE OF BIRDS' EGGS BY THE HUNA TLINGIT

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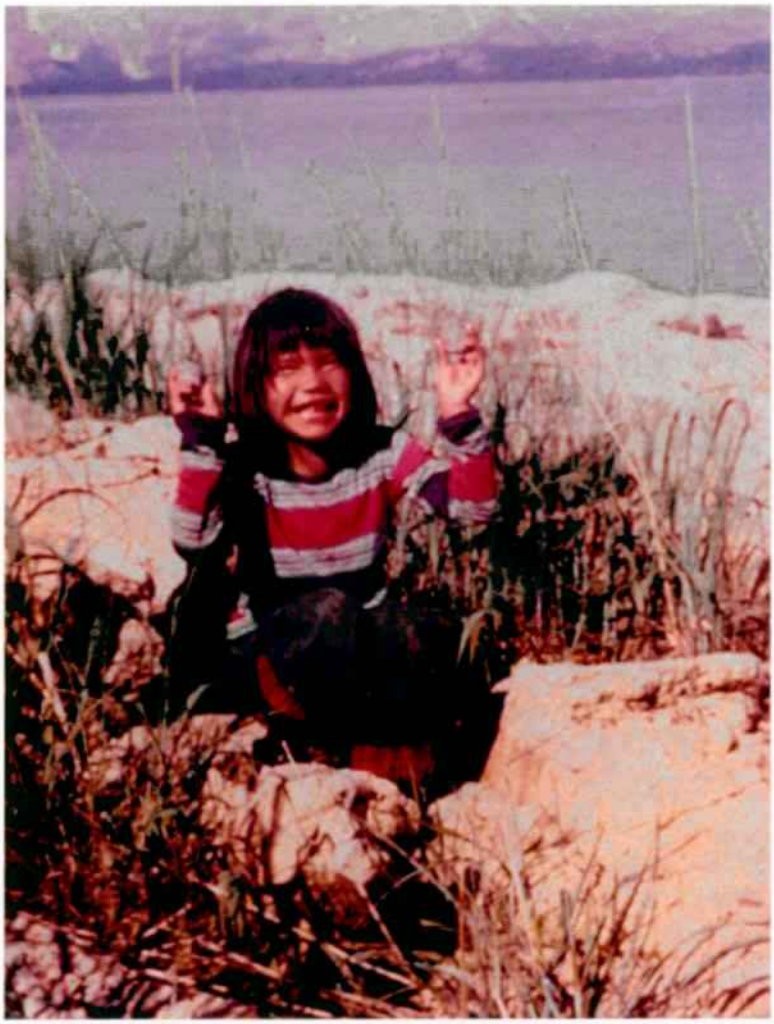

Technical Report NPS/CCSOUW/NRTR-2002-02

NPS D-113

National Park Service
Pacific Northwest Cooperative Ecosystem Studies Unit

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The NPS Pacific Northwest Cooperative Ecosystem Studies Unit (NPS PNW CESU) is located in the University of Washington (UW) College of Forest Resources. The NPS PNW CESU is part of a larger partnership involving 7 federal agencies, 12 universities and the Alaska Department of Fish and Game. The PNW CESU was created in October of 2000 to provide research, technical assistance and education to enhance management of natural and cultural resources on public lands in the Pacific Northwest. The applied social science program associated with the NPS PNW CESU has been operating out of the UW College of Forest Resources since 1970 when it was a part of the Cooperative Park Studies Unit (CPSU).

The U.S. Geological Survey (USGS) Cascadia Field Station (previously known as the USGS University of Washington Field Station) also traces its history to the NPS CPSU established by cooperative agreement between NPS and UW in 1970. In 1997, the CPSU was transferred to the U.S. Geological Survey and administered out of the Biological Resources Division (BRD), Forest Rangeland Ecosystem Center (FRESC) located in Corvallis, Oregon. The mission of FRESC and that of Cascadia Field Station is to work with others to provide the scientific understanding and technologies needed to support the sound management and conservation of our nation's biological resources. Cascadia Field Station programs are developed to provide the appropriate depth and breadth of objective science to meet the information needs of resource managers who encounter complex environmental problems driven by myriad biological, physical, social, and economic forces.

Copies of this Technical Report are available from:

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Denver, CO 80225-0287
Phone: 303-969-2130

Cover Photograph: Seven-year old Phyllis Mills on South Marble Island in 1959.
"Mom's little helper" is holding two gull eggs. Photo courtesy of the Pat Mills family.

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National Park Service, University of Washington

This research was supported by Glacier Bay National Park and Preserve, the USGS/ BRD/ FRESC Cascadia Field Station and the NPS Pacific Northwest Cooperative Ecosystem Studies Unit. The USGS Cascadia Field Station and the Pacific Northwest Cooperative Ecosystem Studies Unit are housed in the University of Washington, College of Forest Resources.

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Hoonah Indian Association
P.O. Box 602
Hoonah, AK 99829-0602
Phone (907) 945-3545 Fax (907) 945-3703

Dear Reader:

As spring approaches in 2003 it is only fitting that the publication " A Study of Traditional Use of Birds' Eggs by the Huna Tlingit" is being released. This is the Huna Tlingits' season of celebrating new beginnings and to once again begin our traditional food gathering cycle. In a short couple of months it will once again be time to harvest the glaucous-winged gull eggs that have long been a spiritual food of the Huna Tlingit. With work such as this publication being accomplished, we now believe that someday in the near future we will again harvest the seagull eggs of our traditional homeland, Glacier Bay National Park.

We, the Huna Tlingit are truly grateful to all those who have fought the good fight. To our Elders, we thank you for your vision, your commitment, your willingness to share your knowledge and to tell your stories repeatedly until we finally understood, and most of all we thank you for your undying love for our homeland, Glacier Bay. In memory of those who are no longer with us, you have taught us that nothing is impossible and that small steps are important, as long as you are moving forward.

To our friends at the National Park Service in Glacier Bay, thank you! Thank you for embracing "Wooshge'een". As we proceed through this three-part process we have focused on the common goal, one of cooperation and understanding. Thank you for recognizing the importance of the Huna Tlingit presence in our homeland, Glacier Bay. The Huna Tlingit cultural and spiritual values run parallel to the values of the National Park Service in the protection and use of this wonderful place we call the Traditional Homeland.

Thank you to the University of Washington for all the work that they so painstakingly applied to this project. We are proud to have this work reflect the knowledge of our Elders and many in our community who choose to partake in this study. We hope that this publication will be used as it was intended, as an educational tool and a recognition of the vital part that the Huna Tlingit are to Glacier Bay.

Frank Wright Jr.
President
Hoonah Indian Association

LETTER OF ENDORSEMENT FROM THE SUPERINTENDENT OF GLACIER BAY NATIONAL PARK AND PRESERVE

United States Department of the Interior

NATIONAL PARK SERVICE
Glacier Bay National Park and Preserve
P.O. Box 140
Gustavus, AK 99826-0140

Tel: 907-697-2230
Fax: 907-697-2654

March 14, 2003

Dear Reader:

Among the many rich resources of Glacier Bay National Park, the large, brown-speckled eggs of the glaucous-winged gulls are a prized food and a vital part of the traditional culture of the Huna Tlingit people. These eggs, once joyously harvested by family groups during their first spring outings, are now also a touchstone for a strengthening relationship between the National Park Service (NPS) – charged with managing all the resources and values of Glacier Bay – and the Huna Tlingit people for whom Glacier Bay is homeland.

I am very pleased to introduce "A Study of Traditional Use of Birds' Eggs by the Huna Tlingit," a publication that documents the cultural significance and historic use pattern of bird eggs by the Tlingit community of Hoonah within the Glacier Bay National Park and environs. This document coalesces the efforts of many including the University of Washington, the Huna Tlingit, and the NPS. I especially wish to thank the people of Hoonah, who openly and willingly shared their traditional knowledge and patiently worked with project and NPS staff to ensure that the study accurately and fully reflects the Tlingit practice of egg harvest. I also very much appreciate the professionalism, expertise, and insights of the authors and other University of Washington staff who spent many months gathering, sifting through, and synthesizing ethnographic and biological information related to this practice. The resulting report is the sole published documentation of Native gull egg harvest in Southeast Alaska and contributes greatly to the growing body of knowledge regarding Huna Tlingit culture.

The National Park Service initially became interested in the traditional practice of gull egg harvest when an NPS-sponsored 1997 workshop involving tribal officials and a council of elders identified legal access to gull eggs as the highest-priority desire of the Huna Tlingit. At that workshop, NPS pledged to work with the federally recognized tribal government of the local Tlingit Natives, the Hoonah Indian Association, to explore ways in which this tradition might legally resume. The resulting working group, called Woosh' ge'een (Tlingit for "Working Together") outlined a step-by-step process for moving toward this goal including the completion of: 1) an ethnography to document Tlingit traditional knowledge regarding egg collecting in Glacier Bay, 2) a biological study designed to model the potential effects of egg harvest on glaucous-winged gull colonies at South Marble Island, the principle collection site for the Huna Tlingit, and 3) a framework for resolving legal and/or regulatory aspects of the issue.

This publication amply fulfills the first step in the process. A biological study contracted for by NPS has also been completed; publication is pending, but preliminary results indicate that some level of egg harvest can be sustained at South Marble Island. While we now understand that the collection and consumption of gull eggs is an integral part of the Tlingit people's heritage and have scientific evidence that limited harvest can occur without affecting park gull populations, we also recognize that legal and regulatory hurdles must still be resolved. The NPS will complete an Environmental Assessment analyzing the potential effects of egg harvest on all park purposes and values and will continue to work with the US Fish and Wildlife Service, the Department of Interior, and the Alaska delegation to pursue any necessary legal and regulatory processes.

I am confident that the process we embarked upon in 1997 – the process of "working together" as scientists, anthropologists, managers, native people's, and members of the public to combine both traditional and scientific knowledge in park management – will bring sound solutions to this and other critical park issues. I believe that this effort signals a new era of cooperation and understanding between all involved and look forward to future collaborative efforts aimed at fostering and strengthening the Huna Tlingit ties to their ancestral homelands in Glacier Bay – a tie that is, in itself, one of many rich resources of Glacier Bay.

We hope that you enjoy – and learn from – "A Study of Traditional Use of Birds' Eggs by the Huna Tlingit."

Sincerely,

Tomie Patrick Lee

Tomie Patrick Lee

Superintendent

ACKNOWLEDGEMENTS

Don Callaway, Wayne Howell, and Mary Beth Moss of the National Park Service provided helpful review comments on various drafts of the report. Wayne Howell provided helpful guidance and assistance in coordinating the project in Hoonah. Mr. Howell's input was especially beneficial in preparing the section of the report discussing the history of the National Park Service and its interaction with the Huna. Theodore Catton, Robert Bosworth, and Robert Schroeder provided peer review for the final draft report. Stephani Zador provided very helpful guidance in identifying and interpreting relevant research articles in the area of gull biology and also provided review comments on the final draft. Jane Swanson assisted with the coding of interview data used in Table 9.

Robert Corbett and Kevin Hackett copy-edited versions of the report draft. Ivonne Ortiz, Kristin Anderson and Cherry Johnson assisted with word-processing, editing and formatting. Bette Welles performed myriad administrative and clerical tasks. For the final report Tracy Woodman provided editorial proofing, and Kelley M. Duffield performed layout, graphics, and print production tasks.

Finally, the authors acknowledge with great respect the contributions the Huna people made to this report, which includes many hours spent in interviews and reviewing the draft report.

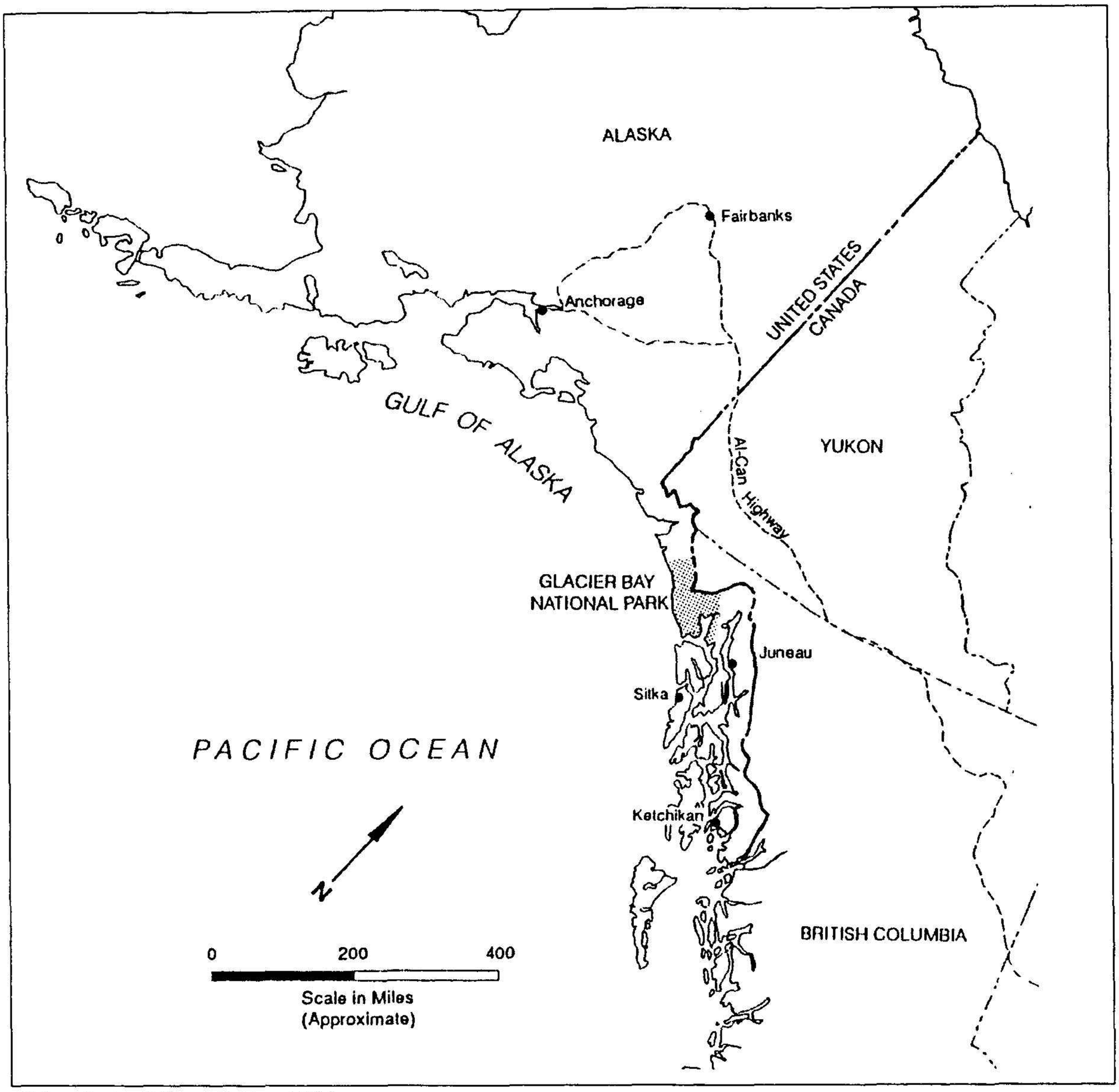
I. INTRODUCTION

This report describes the Huna Tlingit's traditional use of birds' eggs, focusing on Glaucous-winged Gulls (*Larus glaucescens*). It discusses the cultural and nutritional significance of these harvests; compares traditional ecological knowledge pertaining to Glaucous-winged Gulls of the Huna Tlingit with existing biological literature; and maps locations of sites used by the Huna Tlingit to gather birds' eggs. The data reported were collected as part of a larger study: The Huna Tlingit Egg and Ethno-ornithology Study (HTEES). Special emphasis in this report is placed upon harvests of gull eggs within the boundaries of what is now Glacier Bay National Park and Preserve (GBNPP). (See Maps 1 and 2.) The ethnographic information reported herein was collected in an extensive series of interviews conducted in the village of Hoonah, Alaska, throughout the months of May, June, October, and November of 1998. The research findings are intended to be relevant to GBNPP managers and to the people of Hoonah in ongoing discussions regarding the traditional and contemporary use of natural resources within GBNPP by the Huna Tlingit. It should also serve National Park Service interpreters in their efforts to educate park visitors about the cultural relevance of Glacier Bay to the Huna Tlingit.

Administrative Background of the Project

In September of 1997, Glacier Bay National Park and Preserve conducted a two-day facilitated workshop at Bartlett Cove titled "Traditional Ecological Knowledge." In attendance were twenty representatives from Hoonah (including leaders from all of the Huna clans and board members of the Hoonah Indian Associations), a representative

MAP 1: Glacier Bay National Park and Preserve in Regional Perspective

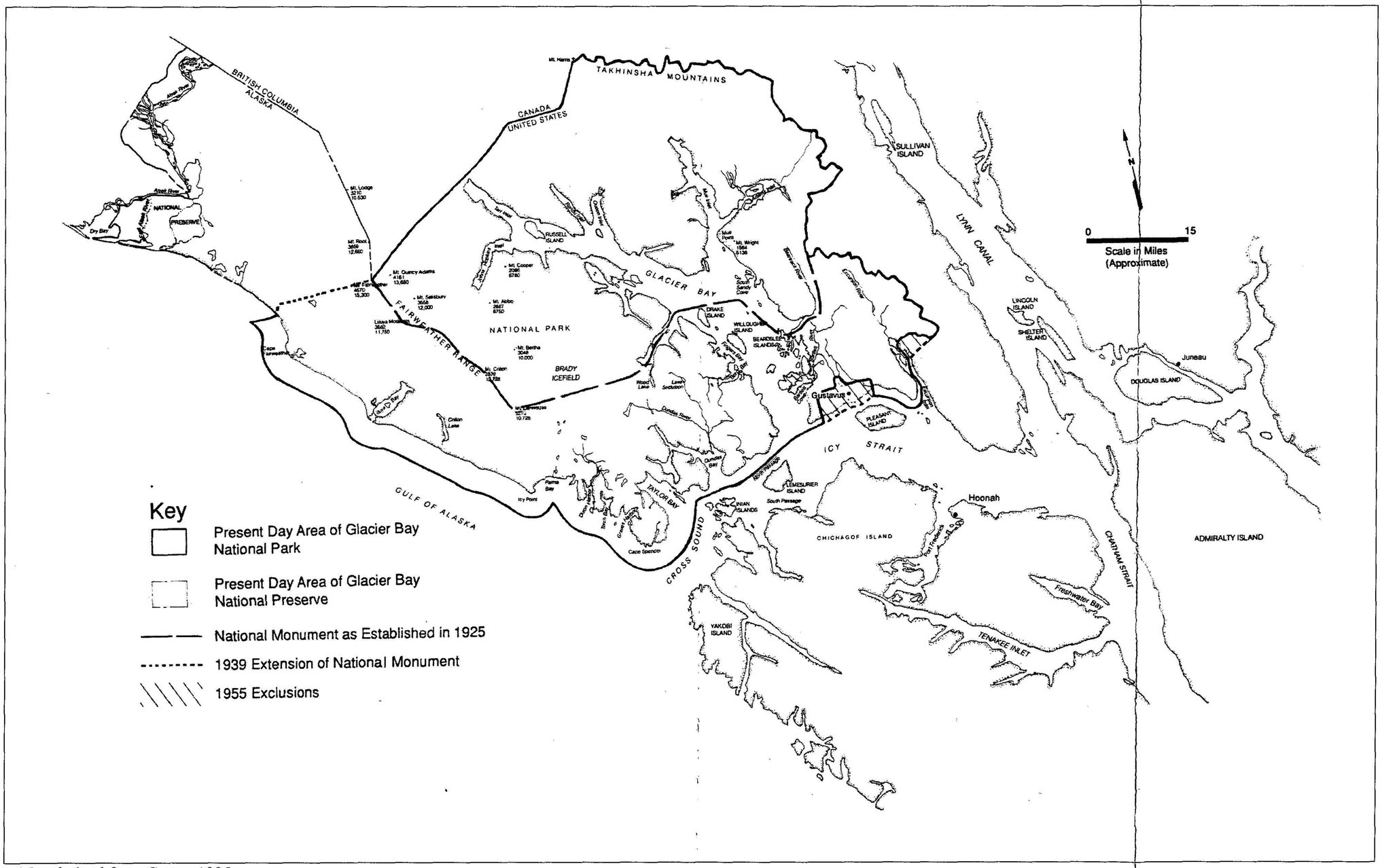


Map derived from Catton 1995.

from the Alaska Department of Fish and Game (ADF&G), six National Park Service (NPS) employees, and professional anthropologists who have worked in Hoonah. Although the original intent of the workshop was to discuss ways in which traditional ecological knowledge could be gathered and used in park management, from the outset the meeting became a forum for a much-needed dialogue between the NPS and the Huna Tlingit. Over the course of two days, the Huna Tlingit expressed various concerns about their lack of access to important traditional resources in GBNPP. Some resources they identified, such as berries, seaweed, fish, and shellfish, may be collected under current regulations. Many Huna were uncertain about what is allowed and what is prohibited under current regulations, and so the group discussed ways to make pertinent information available in Hoonah.

Ultimately, the Huna representatives were unwilling to provide traditional ecological knowledge to GBNPP until there was movement on several resource access issues, including gull egg harvesting. At the end of the two-day meeting, the Huna Tlingits and NPS generated a prioritized list of those critical resources. Gull eggs were at the top of that list. A seven-person committee was chosen from the workshop participants to explore the issue of gathering gull eggs, an important Huna Tlingit cultural activity. This committee was comprised of four Hoonah representatives, two clan elders and two tribal government officials, and three NPS employees. The committee, which chose to call itself "***Woosh'ge'een***" (Tlingit for "Working Together"), identified the first step in this process: ethnography of Huna Tlingit bird egg gathering.

MAP 2: Glacier Bay National Park and Preserve with Historical Monument Boundaries



Map derived from Catton 1995.

Project funding

Funding for the HTEES was provided by the NPS Cultural Resource Preservation Program through Glacier Bay National Park and Preserve. Monies were transferred to the researchers through a cooperative agreement between the NPS, Cascadia Support Office, and the University of Washington. The research itself was performed through the United States Geological Survey, Biological Research Division, Forest Range Ecosystem Science Center (USGS/BRD/FRESC) Cascadia Field Station at the College of Forest Resources, University of Washington in Seattle.

Project personnel

Darryll R. Johnson, Research Sociologist, Social Sciences Program at the USGS/BRD/FRESC/Cascadia Field Station, was Project Leader. Johnson has administered social-science projects associated with the National Park Service for over twenty years. He has also conducted several research projects associated with the interaction between national parks and rural communities in Alaska. In January of 2002, Johnson resigned his position with USGS and accepted the position of Research Coordinator with the NPS Pacific Northwest Cooperative Ecosystem Studies Unit (PNW CESU). He has continued his involvement in the project since accepting the PNW CESU position. Eugene S. Hunn, Professor, University of Washington Anthropology Department, is the Principal Investigator for this project. Hunn has achieved international recognition for scholarly contributions in the areas of ethnobotany and ethnozoology. Thomas F. Thornton, at the time this research was initiated, was

Associate Professor, Department of Anthropology, University of Alaska, Southeast. He is currently Associate Professor, Department of Global Studies, St. Lawrence University. He has published an extensive body of research pertaining to the Huna Tlingit and has considerable field experience in Hoonah. Priscilla N. Russell, an independent scholar from Homer, Alaska, has extensive experience working with Native American communities in Alaska. Russell also has substantial research experience in the areas of ethnobotany and ethno-ornithology. Kathy Falk was a graduate student in anthropology at the University of Washington at the time of the research.

Research Objectives and Questions

The research objectives and work elements reported in this document are identified in Cooperative Agreement No. 1443 CA-9000-95-019, Subagreement No. 1, Modification No. 3, between the University of Washington and the National Park Service. Wayne Howell, Mary Beth Moss, and Don Callaway of NPS proposed the project and drafted the original research questions. After negotiation with the research team, the research questions were finalized and formalized in the aforementioned subagreement modification.

HTEES objectives focus narrowly on Huna harvests of birds' eggs as set out in the cooperative agreement. The study was not funded to, nor do the authors generally attempt to, discuss these harvests in relevant broader academic contexts, such as, the traditional ecological knowledge, ethno-ecology and common property literatures, Migratory Bird Treaty discussions and reports, or the wealth of empirical community resource data available through Alaska Department of Fish and Game, Division of

Subsistence.[1] The authors will publish future articles from this study in the peer-reviewed literature that discuss the relevance of this research from broader academic perspectives (Hunn et al. n.d.).

The portions of the above Subagreement Modification pertinent to the research findings reported herein are attached as Appendix 1. This report does not sequentially discuss the research questions in the order they are listed in Subagreement 1, Modification 3. To aid readers in locating parts of the report that discuss the stated work elements, the authors have listed within footnotes the pertinent tasks and research questions discussed in every major section of the report.

[1] *Several studies conducted by the Alaska Department of Fish and Game document Native participation in bird egg harvesting and provide estimates of total numbers of eggs taken by several Alaska communities. For example, see Wolfe, et al. 1990; Fall, et al. 1998; and Paige, et al. 1996. Wolfe, et al. 1990 observe that the "largest subsistence harvest of bird eggs occurred in communities of the Aleutian Peninsula." Where types of eggs harvested were reported, the great majority were gull or other sea bird eggs.*

II. RESEARCH METHODS

Two research methods were used to accomplish the study objectives. These are: semi-structured qualitative interviewing (including the use of primary informants) and library research. An interview schedule with standardized questions was seen as inappropriate for most of the HTEES objectives for several reasons.

First, few details were known about Huna Tlingit egg gathering and processing, either historically or currently. Most of the HTEES field research questions focused on recording detailed information about these activities. For example, actual egg-harvesting practices needed to be identified so that an appropriate strategy for posing questions on an iterative basis could be developed. The purpose of this approach was to avoid prematurely narrowing the focus of the research questions.

Second, the HTEES research objectives requiring field data are descriptive. The goal was to record this information in the words of Huna consultants and from their own perspectives. To avoid imposing external ideas and concepts on the study data by the way specific questions were asked, images and descriptions of Huna Tlingit life and culture were solicited directly from the Huna themselves.

Third, the study's core research objectives have to do with memories of life experienced more than 35 years ago. It was anticipated that people would not be able to recall this information with sufficient spontaneity and detail to complete a lengthy structured questionnaire. Rather, the approach chosen was to start interviewees thinking about egg harvests and the use of wild birds' eggs. Next, they were encouraged to talk about these subjects in a conversational manner, which was aided by occasional prompts

or questions from the interviewer. In some cases, long interviews were required with return trips to verify information or to ask additional questions that might have arisen through interviews with other Huna.

Fourth, the prohibitions on harvesting certain foods in Glacier Bay National Park and Preserve generates considerable resentment among the Huna Tlingit people, many of whom believe a grave injustice has been done to them. Part of the study's objectives (Task 1, Nos. 15 and 16) involve solicitation of reactions to these prohibitions. In order to obtain this information, Huna people wanted opportunities to talk about their feelings on this subject in their own way and, within reason, in their own time.

Fifth, the goals of the project did not require mathematical generalization to the entire community of Hoonah. In fact, because many of the objectives relate to reconstruction of the cultural context surrounding behaviors that have not occurred on any regular basis since the early 1960s, not everyone in the community was a potential subject for interviewing. The circumstances required reliance on people who were old enough to have experienced gathering, consuming, and preserving gull eggs. This type of situation is not only ideal for ethnographic methods but in most respects requires them. The methods employed are discussed below in more detail under the heading "Selection of Consultants."

Researchers' Interaction with GBNPP Staff and the Hoonah Community

On May 26, 1998, Johnson, Thornton, and Russell traveled to Glacier Bay National Park and Preserve to review the project objectives and research questions with Moss and Howell, employees of GBNPP. This trip also involved a field visit to the

Marble Islands via boat. Hunn, who was unable to be there, met with park personnel on June 8 after spending a week in Hoonah.

Before the field research started, a meeting involving Howell, Hunn, Thornton, and Russell and interested members of the Hoonah community was held on May 31, 1998 at the Hoonah Indian Association (HIA) offices in Hoonah. The meeting was chaired by Mary Rudolph, president of the HIA. Representing the Huna Tlingit on the "Working Together" committee were Richard Dalton, Sr., Wilbur "Jumbo" James, and Pat Mills. Frank Wright, Jr., was unable to attend. Also present were Edith Bean, George Obert, Beatriz Brown, Ken Brown, Wanda Culp (HIA Natural Resources Director), Maureen Obert (HIA Cultural Resource Director), Winnie Smith, and Lily White. Wayne Howell represented Glacier Bay National Park and Preserve. Eugene Hunn, Priscilla Russell, and Thomas Thornton of the research team attended. (Darryll Johnson had to return to Seattle before the meeting.)

Howell began by describing the background and goals of the study, noting in particular the role of the "Working Together" committee of Huna and GBNPP park staff formed the previous year. Next, Hunn introduced the research team, emphasizing its independence as university-based researchers. He promised that all materials and results produced by the project would be made available equally to the Hoonah community and to the National Park Service for review and comment. Hunn briefly outlined the research methods and invited those present to offer suggestions or to ask questions. Thomas Thornton and Priscilla Russell then introduced themselves, describing their experience working with Alaskan Native communities and subsistence issues.

The following Hoonah community leaders then spoke in response: Richard Dalton, Sr., George Obert, Jumbo James, Edith Bean, Wanda Culp, and Winnie Smith. A central concern expressed was that the report not "gather dust on a shelf at the Park office," but rather have some real impact.

Selection of Consultants

A list of potential consultants was suggested initially by Thornton. (Thornton has extensive experience within the Hoonah community researching traditional aspects of Huna Tlingit culture, including natural resource harvests.) This list was reviewed by Ms. Maureen Obert of the Hoonah Indian Association and Mr. Albert Dick, Mayor of Hoonah, both of whom suggested additional individuals who had specific knowledge relevant to the project. Finally, during the interviews, consultants were asked to identify any persons in the community not on the list that they believed should be interviewed, given the study objectives. There were two instances in which people contacted Russell asking to be interviewed. In total, 45 people served as consultants to the egg-gathering portion of the HTEES (see Appendix 3). All consultants participated in the project on a voluntary basis and were paid.

Semi-structured Interviews

Subsequent to reviewing the available literature pertinent to the research objectives and after the Hoonah community meeting, a semi-structured interview form was designed on-site (see Appendix 2). This form served as a guide to ensure that consultants were asked about similar topics and that all relevant topics were eventually covered. When uncertainties arose during the interviews, more detailed questions were

posed until the interviewer judged that responses to the various question items had been exhausted. With the permission of consultants, all interviews were recorded and completed interview tapes were duplicated for use at the USGS University of Washington Field Station office (now Cascadia Field Station). HIA also requested copies of the interviews leading to additional written permissions from the interviewees.

Interviews and Transcriptions

Two fieldwork periods

There were two fieldwork periods in Hoonah. The first was scheduled from May 30 to June 12, 1998, and was intended to introduce the study to Hoonah residents, refine the interview protocol, and to complete as many interviews as possible. These interviews focused primarily on gull egg gathering and secondarily on ethno-ornithology. Hunn accompanied Russell and Thornton on several interviews and performed one interview himself. Satisfied that the interviewing was going well, he departed from Hoonah on June 3, 1998. Thornton returned to Juneau on the same date and continued to interview Huna Tlingit consultants living in Juneau who had at one time gathered eggs or had special knowledge of bird egg gathering. Russell remained in Hoonah interviewing consultants there and departed on June 13, 1998.

The second fieldwork period was from October 20 to November 6, 1998. This effort was intended as a follow-up to the first period. This allowed more information to be gathered for subject areas where it was deemed lacking and, importantly, enabled the delivery of transcribed interviews to consultants for their review. Any available time after the aforementioned tasks were completed was to be spent working on the ethno-

ornithological tasks in a separate research report. Russell was the only interviewer during the second field work period.

Interview transcriptions

Falk transcribed interviews, creating electronic files. Those parts of the interviews Falk had difficulty understanding were marked so that the interviewees could clarify the intended meaning. Issues dealing with the Huna language were resolved in coordination with Thornton or marked for review by consultants.

Consultants' review of transcriptions

Respondents in Hoonah were given several days to review the interviews during the second fieldwork period. They then met with Russell to discuss their concerns and suggestions. At this time, she asked about any items that were unclear and in many cases conducted additional interviews, either gathering more data about egg harvesting or the ethno-ornithological objectives reported in a separate research report. The corrected and edited interview documents were then forwarded to the Cascadia Field Station for modification. These modified interviews constitute the database from the fieldwork.

Analysis of the Data

Each of the researchers read all the interviews. In preparing the report, each person was assigned specific responsibilities in creating the initial drafts. Subsequent drafts were reviewed by each member of the research team, then modified and reviewed again until the Principal Investigator and second author were satisfied that consensus had been reached on the substance of the report. Several draft reports were submitted to Hoonah residents for review during the summer of 2001.

Consultants with extensive experience gathering eggs were shown USGS topographic maps (scale 1:250,000) of Hoonah traditional lands and waters. They were then asked to identify sites where they had harvested eggs while living in Hoonah. The methodology produced an exhaustive list of sites known to the living Huna Tlingit, within the limits of their ability to recall areas where eggs were gathered. Sites were identified by their English and Tlingit names where possible. (Information on Tlingit place names was also gathered from previous research conducted by Thornton in conjunction with the National Park Service, Hoonah Indian Association, and the Alaska Department of Fish and Game.) Interviewers recorded species of birds' eggs gathered at each site and inquired about other activities that took place at the time of harvesting at or around the harvesting areas. Other special features of the site were also recorded, including comments about the site's accessibility, productivity for egg gathering, recent ecological changes, etc.

After reviewing and coding the interview data, sites were numbered and plotted on USGS 1: 250,000-scale maps. In total, 42 sites were identified within traditional Hoonah territory. Numbers coded with circles designating gull egg-harvesting sites and squares designating sites where eggs from species other than gulls were harvested. Table 7 summarizes the mapping data. Appendix 4 contains a complete listing of all sites identified, along with detailed information about the sites. The 42 egg-harvesting sites are plotted on Map 3.

Because a comprehensive sampling strategy for documenting egg-harvesting sites was employed, the researchers were able to enumerate additional egg-harvesting sites not identified in earlier studies with fewer samples. At the same time, because not all egg

harvesters who have resided in Hoonah were interviewed, it is possible that there are additional egg-harvesting sites that were used historically which are not documented. However, the authors believe that there are very few unidentified sites, and that they were not widely used in the 20th century.

Limitations of the Interview Data

As noted above, the HTEES fieldwork used an ethnographic approach relying on semi-structured interviews with paid, voluntary Huna Tlingit consultants who were knowledgeable on subjects related to the research objectives. The research findings are subject to any and all limitations inherently associated with this research method. Four methodological issues that should be kept in mind while reading this report are briefly noted below.

First, no attempt was made to proportionately sample the residents of Hoonah or to create a database that would allow mathematical generalization to the community at large. As such, the HTEES findings are most reliable in describing cultural phenomena such as the ideal cultural context of bird egg gathering during the times when such gathering was relatively free of legal enforcement and allow the formation of conclusions about the range of individual behaviors associated with such gathering. The HTEES database cannot be used to make statistical inferences to the universe of Huna egg gatherers neither now nor in the past, for any purpose, including estimates of the distribution of individual behaviors or attitudes associated with bird egg gathering. However, reasoned intuitive conclusions are possible.

Second, interviewer bias is a potential limitation in any qualitative research. The interviewer sets the tone for the interview, asks the questions, and follows up with more

latitude than when only structured questions are asked. In the case of the HTEES, this issue was managed by extensive review and discussion of the project objectives and research questions prior to the fieldwork among the research team. The principal investigator also accompanied the interviewers on several interviews to ensure that questions were being asked objectively and that all questions were understood. In addition, the project interviewers both have extensive experience working in Alaska Native villages. Finally, the HTEES research design included more than one interviewer. Having more than one interviewer helps in assessing interviewer bias in that results from the two interviewers can be compared.

Third, issues concerning validity are difficult to manage in qualitative research designs like those used in the HTEES. In the most general sense, concerns over validity can be expressed by the question: Do the research operations measure the concepts that are intended to be measured? In the HTEES, an intended purpose of the design was to allow consultants to freely describe their practices with minimal constraints from question or response formats. In such qualitative research, the possibilities that different consultants will use the same terms in different ways, or that researchers may misinterpret the consultants' responses, make it difficult to demonstrate validity.[2] Validity issues were addressed in the HTEES by the following elements of the research design.

1. Efforts were made to ensure the interviewers understood the research questions. Prior to entering the field, the questions were discussed and key research articles were shared among the research team.

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[2] *Quantitative and structured approaches to social-research methods allow more precise definition of the terms and issues related to a particular research question, and are thus less subject to some concerns about validity than is qualitative research. However, quantitative approaches are of little use in studies such as the HTEES, where not enough is known about the phenomena of concern to formulate appropriate questions.*

2. The community meeting gave researchers and the residents of Hoonah an opportunity to discuss the research questions and assess congruent understanding of the key questions.
3. The semi-structured protocol helped to ensure that key concepts and language were used consistently.
4. All interviews, as noted above, were read by four people and the transcriber. In cases where questions arose about what individuals were saying about substantive issues, the researchers were able to re-read the appropriate sections and discuss interpretation of the data.
5. Interviews were transcribed and read, then sent back to the consultants for review. This process not only allowed consultants an opportunity to examine their comments but also gave the researchers an opportunity to clarify points that were vague and to re-examine issues that might have been misunderstood.

Fourth, anthropological research that utilizes key actors (i.e., key informants) and qualitative interviewing may rely heavily on one or two knowledgeable people. As a result, there can be an over-reliance on incomplete, or even biased, information. Such studies may yield overly simplistic descriptions of complex social phenomena, and results can sometimes be intentionally biased by informants. The HTEES research design purposely attempted to overcome this limitation by interviewing a large number of consultants - essentially attempting to exhaust the number of eligible respondents in Hoonah who were able or willing to contribute to the project at the times designated for data collection. This approach (i.e., using chain referral or snowball sampling and saturating the amount of information gathered on the research questions by interviewing several people) was also thought to be essential to minimize inherent memory problems associated with research that seeks to describe behaviors and other aspects of social life that occurred in the distant past.

The large number of consultants represented in the HTEES database should allow construction of a more accurate picture of the range of egg-gathering behaviors and of

individual interpretations of the cultural context of these behaviors, than if the researchers had relied on a very small number of consultants. The comparatively large number of consultants also helps to resolve issues of validity in instances where one or two key people might be approaching a subject differently than other people in the community.

Despite the limitations mentioned above, the researchers are confident that the HTEES interviews represent the most detailed and accurate record of Huna Tlingit bird egg gathering available.

III. A SKETCH OF HUNA TLINGIT SETTLEMENT PATTERNS AND SUBSISTANCE PRACTICES PRIOR TO THE ESTABLISHMENT OF GLACIER BAY NATIONAL PARK[3]

Who are the Huna Tlingit?

The Huna are one of thirteen *kwaan* or "tribes" (contemporary Huna prefer *Kaawu*, as in *Huna Kaawu*, as their self-designation) of the Alaskan Tlingit language group or nation. The Huna of today include members of four major clans with original ties to Glacier Bay as well as members of a few additional clans. The village of Hoonah across Icy Strait from Glacier Bay is now and has been since earliest recorded history their primary permanent settlement. Before the 20th century, however, the Huna occupied additional winter village sites, but these have been abandoned in favor of residence at Hoonah.

The historical process of residential consolidation at the present site of Hoonah is poorly understood and beyond the scope of the present research. However, it is relevant to a proper understanding of how Huna Tlingit strategies for harvesting gull eggs may have changed since the pre-European contact period, and to the question of the effect the establishment of GBNPP had on prior gull egg-harvesting practices. In the 19th century Huna Tlingit people apparently occupied perhaps as many as a dozen "villages," "settlements" and "forts" distributed throughout their recognized territory (de Laguna 1990; Goldschmidt and Haas 1998). Sites identified in these two sources as "settlements," "villages," or "forts" are listed in Table 1.

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[3] *This section of the report addresses Task 1, Research Questions 1, 4, 6, 9, 12, and 14, in part. See Appendix 1.*

These village sites were staging areas for subsistence harvest activities within the Huna Tlingit tribal territory. Abandonment of villages was in part a response to depopulation due to introduced disease epidemics, to the founding of commercial stores in Hoonah, to involvement in the commercial fishing industry and to pressure from Protestant missionaries (Langdon, 2001:106, 112, 121, 195-196). However, several villages and camps were abandoned as a direct result of forced exclusion by whites; in particular, fox farmers are reported to have preempted Huna village lands and forcibly excluded residents of those villages (e.g., Inian Islands and Drake Island). A former fishing camp and possible village site at Bartlett Cove appear to have been preempted by the GBNPP administration but the sites were not in use at the time the Glacier Bay National Park administrative center was built (Langdon, 2001:104-121). Statements by many Huna Tlingit people indicate that they associate their exclusion from traditional settlements within Glacier Bay with the establishment of Glacier Bay National Monument.

Table 1. *Some Huna Tlingit "Settlements," "Villages" and "Forts," Past and Present*

English name	TLINGIT NAME	Clan territory	Type of site	Current status	Comments
Hoonah	Gaaw T'ak Aan	*all clans*	village	present	
Taylor Bay	Asgutu.aan	T'akdeintaan	village	abandoned	"There were no houses except smokehouses there during our time.... Nobody lives there now...." (Goldschmidt and Haas 1998:56)
Inian Island		Chookaneidi	village	abandoned	"There were many houses at a village on the island. The Chookaneidi had four houses and the T'akdeintaan had two. ... The village was located at the site of the present buildings of the fox ranch. The Native people left this place when the fox farm was created and the whites would not let people go to the island, even to pick berries." "... [inhabited] until a fox farm was established about 40 years ago [ca. 1906]...." (Goldschmidt and Haas 1998:58)
Dundas Bay	L'istee	T'akdeintaan	village & fort	abandoned	"There were three big houses at L'istee, and these are now rotted away.... We continued to go there in recent years, but recently a white man named Wright has chased us away. Fred Lawrence [a native of Hoonah] was chased out with a gun, and he came back and warned the people not to go there." (Goldschmidt and Haas 1998:55). Western Fisheries Co. built a cannery in Dundas Bay [in 1900].
Lemesurier Island		T'akdeintaan	village & fort	abandoned	"[This was] a winter village with permanent houses.... Now white people have a fox farm there.... For a time, we were not allowed to land, but now we can again pick wild currants in the fall" (Goldschmidt and Haas 199856)
Pt. Carolus		Chookaneidi	village	abandoned	three dwellings and a large smokehouse (or two); "now... reduced to two"; "Point Carolus was a permanent settlement for hunting and fishing" (Goldschmidt and Haas 1998:55). "Mrs. Oscar Williams and family had a garden at Watdakhéen [Carolus River] in Glacier Bay and used it until it was closed by the Department of the Interior." (Goldschmidt and Haas 1998:134)
Drake Island		T'akdeintaan	Fort	abandoned	"[F]ox farmers forced them out, tore down the fort and palisade.... The two old people who lived there were run off and their houses torn down" (Goldschmidt and Haas 1998:55).

Table 1. *Continued*

English Name	Tlingit Name	Clan territory	Type of site	Current status	Comments
Berg Bay	Chookanheeni	Chookaneidi	Fort	abandoned	"...smokehouse with caved-in roof there [1946]" (Goldschmidt and Haas 1998:55); "We used to have houses right below the stream that enters Berg Bay,... We have all been in those houses ourselves." (Goldschmidt and Haas 1998:132)
Pt. Adolphus /Mud Bay		Chookaneidi	village	abandoned	"There used to be a house west of Pt. Adolphus, but we don't go there anymore.... There were houses at Mud Bay.... There were about four houses. The posts still remain" (Goldschmidt and Haas 1998:58)
Bartlett Cove	Ghatheeni	all clans	village	abandoned	"The most important area in Glacier Bay was Bartlett Cove.... Here there had once been a village, and up to the time the National Monument was created, there were smoke houses... and gardens and a summer camping place there" (Goldschmidt and Haas 1998:55)
Village Point	Lulxágu	Wooshkeetaan	village	abandoned	abandoned 1911 (de Laguna 1990:204); "I lived at a place called Village Point with my uncles and other relatives during the winter.... I had a cabin at Village Point, but stopped living there when the old people died, about fifty years ago [ca. 1896]" (Albert Jackson as quoted by Goldschmidt and Hass 1998:134);
"Grouse Fort"	Kax'noowu	Kaagwantaan	village	abandoned	"settled by people from Glacier Bay, abandoned about 1830" (de Laguna 1990:204); according to Huna legend, their ancestors were forced from Glacier Bay by the advance of a glacier, and subsequently settled at Excursion Inlet, Grouse Fort (Kaagwaantaan), and Spasski Bay (Chookaneidi) (as told by Amy Marvin in Dauenhauer and Dauenhauer 1987:260-291)
Couverden Island			trading post	abandoned	

Photograph 1. Village of Khart Heenee [Ghatheeni], Bartlett Cove c. 1888.
A summer village of the Hoonah Kow [Kaawu] on Lester Island at the entrance to Glacier Bay, c. 1888. "Khart Heenee" [Ghatheeni] [Sockeye] salmon water (also the Tlingit name for the Salmon River). Photograph by G.T. Emmons. Used courtesy of the *American Museum of Natural History,* New York, N.Y.

Photograph 2. Village of Hoonah c. Early 20th Century.

Photo used courtesy of the *Alaska State Library*. The Case and Draper photograph collection, 1898-1920, PCA 39-405.

Huna Tlingit traditional tribal territory includes virtually all of Glacier Bay National Park as well as adjacent areas. This territory was identified by Goldschmidt and Haas in the mid-1940s during their investigation pursuant to the Indian Claims Commission Act (1998:xv). Their description is quoted below:

> Taking into consideration the evidence from Krause, Niblack, and Swanton, and in the light of the statements made by witnesses, the following territory may be assumed to have been recognized as that of the Hoonah people: The mainland coast from approximately Point Howard on Chatham Strait westward around Cape Spencer and northward on the Pacific coast approximately to Cape Fairweather; on Chichagof Island from Point Augusta westward to Point Urey on the Pacific coast including the head of Tenakee Inlet reached by portage; all the islands in Icy Straits and Cross Sound. There is some doubt as to whether all of Yakobi Island and the west coast of Chichagof Island was Hoonah or Sitka territory in 1884 and earlier... (Goldschmidt and Hass 1998:53)

GBNPP falls within the traditional territories of two Tlingit groups: the Huna Tlingit and the Dry Bay Tlingit. The Huna Tlingit are now largely centered in the village of Hoonah, while Dry Bay people are now largely consolidated at Yakutat. Collectively, the traditional territories of the Huna clans are referred to as *Huna Kaawu*, which is perhaps best translated as "Huna Peoples' Country." The boundaries of this territory are outlined in Appendix 7 (from Goldschmidt and Hass 1998). Appendix 7 also delineates traditional territorial boundaries of the major clans (save for the Kaagwaantaan) that stem from Glacier Bay as Huna informants believed them to exist at the time of the Goldschmidt and Hass study. As noted above, clan possessory rights over a territory generally did not preclude other Huna residents of Huna Kawoo from harvesting. As consultant Pat Mills put it, "...People from other places had to get permission, but if you were from Huna and knew the place you could just go." Relatives and friends from other

communities, such as Angoon, Tenakee, and even Metlakatla, were welcome, as long as there were enough eggs and they went with a local family.

The Huna Tlingit may have numbered some 1,500 before the arrival of European explorers and settlers, who brought disease in their wake (see Table 2). The Huna aboriginal population and its decline are documented in the "Northwest Coast" volume of the *Handbook of North American Indians*.

Table 2. *Huna Population Estimates 1740-1938, from de Laguna (1990:205), Boyd (1990) and Catton (1995).*

Year	1740	1839	1840	1861	1880	1885	1890	1910	1938‡
Pop. Est.	1596†	782#	450*	1332*	908	600-800#	592	625	734

†Estimated by multiplying 782 by 0.49, the ratio of Boyd's Tlingit totals estimated for 1839 and pre-contact.
‡U.S. Census (Catton 1995:105)
#These totals include only Hoonah village.
*These totals include figures for Lituya Bay.

More recent U.S. Census population estimates for Hoonah show the 1980 Huna population as 680 and the 1990 village population as 915, of which 622 (68%) were Tlingit. It is important to bear these figures in mind in assessing the past and future impacts of Huna Tlingit gull egg harvests.

A Sketch of Huna Tlingit History

To place the Huna egg-harvesting tradition into historical context, the following timeline chart (Table 3), incorporates relevant key events in Huna Tlingit and Glacier Bay histories.

Table 3. *Huna Tlingit/Glacier Bay Historical Timeline.*

8230±800 B.C.	Ground Hog Bay site #2 NE of Hoonah across Icy Strait (Carlson 1990:67; Ackerman et al. 1979:98-201); earliest documented human occupation; characterized by microblade technology.
4000 B.C.	Date of basket fragments excavated on Prince of Wales Island at the Silver Hole site identified as "statistically Tlingit in style" (Croes, 2001:145, 148).
1020±70 AD	Archaeological materials indicating Northwest Coast Tradition, including Tlingit.
Ca. 1100 AD	"Little Ice Age" begins, Huna expulsion from Glacier Bay by ice follows (Thornton 1999).
Early-mid 1700s	Oral histories of sighting of ships of Europeans (so-called "People from the Clouds") in Lituya Bay.
1741	First Old World contacts with Russians (brief but hostile). Chirikov expedition lost two longboats of men in Cross Sound region (Gunther 1972; De Laguna 1990:223). Tlingit oral history suggests they sought asylum and were adopted.
1775	Spanish ships of Bruno de Heceta bring smallpox (de Laguna 1990:223). Estimated 30% mortality reduces Tlingit population from an estimated pre-contact value of 14,820 to an estimated 9,980 (Boyd 1990:137).
1794	Vancouver sails into Icy Strait; glaciers block entrance to what is now Glacier Bay (Thornton 1999).
1799	Russian fort at Sitka est. by Aleksandr Baranov (De Laguna 1990:223).
1825	Sea otter nearly extinct in southeastern Alaska (De Laguna 1990 210).
1836	Second smallpox epidemic causes estimated 27% mortality among Tlingit, reducing the total Tlingit population to about 7,255 (Boyd 1990:140-41).
1845	Glaciers retreat past the Marble Islands.
1867	U.S. purchase of Alaska from Russia.
1877	C.E.S. Wood enters Glacier Bay with Tlingit guides; encounters several seal- and goat-hunting parties.
1878	Salmon salteries/canneries first established at Klawock and Sitka.
1879	Glacier Bay visited by John Muir, guided by Tlingit.
1880s	Tourism begins in Glacier Bay with arrival of steamships.
1884	Organic Act guaranteed that the Natives would "not be disturbed in the possession of any lands actually in their use or occupation or now claimed by them," but acquisition of title subject to future congressional action.

Table 3. *Continued*

1890-91	Bartlett Bay Packing Company, hand packing 4,300 cases of salmon, is built in 1890 but does not operate in 1891 because of ice (Kurtz 1995).
1898-99	Gold rush through Chilkat-Chilkoot territory (de Laguna 1990:224).
1899	Harriman Alaska Expedition brings prominent scientists to Glacier Bay, where several shared a meal of "gulls' eggs, boiled marmot, and seal" (Goetzmann and Sloan 1982).
1900	Western Fisheries Co. builds a cannery in Dundas Bay; American Saltery established in Icy Strait at Bartlett Cove "in the late 1800's or early 1900's".
1902	Tongass National Forest established.
1906	Alaska Native Allotment Act
1912	Alaska Native Brotherhood established (Alaska Native Sisterhood in 1923).
1924	Alaska Natives enfranchised by federal law (de Laguna 1990:225).
1925	Glacier Bay National Monument established (see Map 2).
1939	Boundaries of Glacier Bay National Monument expanded to include important egging areas (Bosworth 1987, 1988).
1939	Hoonah Indian Association incorporated under Indian Reorganization Act.
1944	Village of Hoonah burns to the ground.
1946	Hoonah incorporated as First Class city. Goldschmidt and Haas report notes Huna dissatisfaction with Glacier Bay National Monument regulations. Huna subsistence use of Glacier Bay is documented in BIA report that mentions seal, goat, marmot hunting, gull egg collecting, trapping and catching salmon.
1947	Lowell Sumner report argues for closure of upper portions of Glacier Bay to Native seal hunting and prohibition of gull egg harvests.
1949	Canadian Pacific steamer *S. S. Kathleen* inaugurates schedule of eight cruises into the bay each summer.
1966	Glacier Bay Lodge is constructed at Bartlett Cove.
1968	Tlingit and Haida Land Claims Settlement Act compensating Tlingit and Haida Indians for Tongass National Forest and Glacier Bay National Monument.
1969	The cruise ship Mariposa enters Glacier Bay beginning a modern trend leading to the extensive use of the area by such vessels. 6,300 recreational visits to Glacier Bay National Monument.
1971	Alaska Native Claims Settlement Act

Table 3. *Continued*

1972	Marine Mammal Protection passed by U.S. Congress; provides for some subsistence uses by Native people.
1974	Sealaska Regional Corporation and Huna Totem corporation formed.
1974	Huna aboriginal hunting privileges dating from an agreement in 1939 rescinded (Catton 1993). Limited entry commercial fishery decreed. Inian Islands closed by State of Alaska to seine fishing. 47,800 recreational visits to Glacier Bay National Monument.
1980	Alaska National Interest Lands Conservation Act (ANILCA) passed by U.S. Congress; Glacier Bay National Monument becomes National Park
1982	Huna Totem Corp. signs timber contract with Timber Pacific.
1988	Hoonah Traditional Tribal Council established.
1995	Memorandum of Understanding signed with GBNPP.
1997	TEK workshop held at Bartlett Cove; work on gull egg issue begins. Proposed regulations phase out commercial fishing from the bay over a 15-year period. Glacier Bay National Park and Preserve has 336,226 recreational visits; 306,216 of these are people aboard cruise ships.
1999	U.S. and Canada announce formal agreement to a protocol amending the Migratory Bird Treaty Act. This agreement allows both countries to comparatively manage subsistence uses of migratory birds and their eggs, including harvests in spring and summer.

Huna Tlingit Subsistence in Glacier Bay: An Historical Perspective

The first mention of Glacier Bay in the historic records comes from the Vancouver expedition of 1792 (Vancouver 1801). Although Vancouver's shore party described Glacier Bay as a massive wall of ice fronting the turbulent berg-choked waters of Icy Strait, they nonetheless encountered a Native group camped near the mouth of the bay (likely at Point Carolus) and seemingly at home in the inhospitable environment (Menzies 1993:148-151).

Almost 85 years passed before the next mention of Glacier Bay in the historic record. In 1877, U.S. Army officer Charles Wood explored the region with the help of

Tlingit guides and reported his adventures in the then popular *Century Magazine* (Wood 1882). Interestingly, Wood describes an encounter with a seal hunting party equipped only with stone tools and lacking metal, an indicator of the relative isolation of Glacier Bay at that time. A year later naturalist John Muir ventured into the bay, also with Tlingit hunters as guides, on his quest to understand glacial dynamics (Muir 1915).

Glacier Bay captured Muir's imagination, and his effusive writings and public presentations prompted others to follow. Within several years of Muir's first visit, Glacier Bay became a regular stopover for steamships carrying an assortment of scientists, explorers and adventuresome tourists. All accounts by these early visitors mention the presence of Huna Tlingits actively involved in traditional activities throughout Glacier Bay. Camps were reported in the middle and lower reaches of the bay, and the Native village and cannery in Bartlett Cove was a regular stopover for steamships (Scidmore 1893).

Muir's early interest was followed by a long period of scientific inquiry at Glacier Bay, with several expeditions launched to study the bay's glaciers, geology, and plant and animal life (Kurtz 1995). In 1899, the last great American scientific expedition of the 19th century, sponsored by railroad magnate Edward Harriman, passed through Glacier Bay with an assortment of eminent scientists, artists and photographers, confirming Glacier Bay as a natural laboratory of unsurpassed importance (Goetzmann and Sloan 1982). One party from the expedition encountered a group of Huna Tlingits in Berg Bay where they were invited to share a meal of "gulls eggs, boiled marmot and seal" (Ibid.).

Through the diligence of William S. Cooper, a student of the emerging field of ecology, an effort to protect the natural laboratory of Glacier Bay was cast in the national spotlight. Following a lobbying effort by the Ecological Society of America and an intense political battle pitting preservationists and scientists against business interests and settlers, Glacier Bay was designated a national monument by presidential proclamation on February 26, 1925.

Tlingit society underwent profound changes during this period. Following the purchase of Alaska in 1867, missionaries arrived and established churches and schools, influencing Tlingits toward a more centralized and settled way of life. Prospectors, trappers, homesteaders and fox farmers competed with Tlingits for land and resources. The burgeoning commercial salmon industry brought about sweeping changes beginning in the late 1870s. In a few short years, salmon, the foundation of the Tlingit economy, was transformed into common property, and Tlingits were reduced from proud owners of streams and fish resources to wage labor fishers and cannery workers (Langdon 1989). Within several decades the combination of these forces moved the Tlingit away from dispersed settlements and seasonal harvest rounds to increased aggregation, sedentariness and reliance on the cash economy. A vague federal land policy initially acknowledged Native ownership but failed to convey title, with the exception of the Native Allotment Act of 1906, which allowed individuals to apply for 160 acre "homesteads." Natives found themselves increasingly isolated within their principal villages, cutoff from many traditional subsistence sites that were being settled by non-Natives or included in federal land management units, including the Tongass National Forest and Glacier Bay National Monument. In the face of powerful pressure to assimilate, many Tlingits were able to

integrate these societal changes with their traditional subsistence way of life. For example, the summer's commercial fishing activities were dovetailed with subsistence fishing, hunting and gathering outings, and the transition to gas-powered boats meant that many of the traditional locations for these activities could be swiftly accessed and continued to be important.

Following establishment of Glacier Bay National Monument in 1925, the National Park Service had very little direct involvement in managing the monument until the late 1930s. When NPS representatives began to arrive on annual summer visits beginning in 1939 (the year the monument was expanded to include lower Glacier Bay), they encountered a host of non-Native homesteaders, miners, trappers, commercial fishers and fox farmers. They also describe a Native culture in a state of transition, although still very much connected to the Glacier Bay landscape. The Huna were clearly involved in cash-oriented activities such as trapping, seal hunting for hides and bounty, commercial fishing, and prospecting. Officials also noted smokehouses at the mouths of productive fish streams, and parties actively involved in excursions to gather berries and gull eggs (see Traeger 1939 and Been 1940).

As NPS officials began to implement laws and regulations governing parks and monuments, the nature of the mixed Huna economy (described in detail in Catton 1995, 1997) presented a management dilemma. On the one hand, officials moved to eliminate certain uses among all users, Native and non-Native alike, such as trapping and hunting of land animals. Gathering of birds' eggs, which was technically illegal in accordance with provisions of the Migratory Bird Treaty Act and federal regulations, was eliminated in the Monument during the early 1960s. This action strained relations between Huna

Tlingits and the NPS since the only place where the prohibition was enforced regionally was in Glacier Bay National Monument, effectively cutting Huna Tlingits off from their most favored and productive gathering sites. However, other activities were allowed by the NPS to continue. Seal hunting for bounty was allowed to continue because of its important role in the Hoonah economy until it too was legally terminated in 1974. Commercial fishing also continued to be allowed within the Monument, although the Huna seine fishery occurred primarily in outside waters. Subsistence activities often continued at favored locations following the commercial fishing season, such as Dundas River where the seine fleet would anchor so people could pursue berry picking and subsistence fishing at traditional sites (Richard Dalton pers. comm. 1999).

As time went on, even authorized uses began to decrease because of tension between Huna people and the NPS. However, recent research and several law enforcement episodes indicate that Huna Tlingit use has nonetheless continued at some minimal level. For example, Schroeder (1995) shows that Huna Tlingit use, although diminished in intensity, continued throughout all areas of the park well into the 1980s, even though technically illegal. Davis (1999) demonstrates that seal hunting continued at least through 1994 in most areas of the park, albeit at fairly low levels. In addition, NPS law enforcement actions resulting from Huna Natives collecting gull eggs in the park in 1999 indicates that this favored activity has continued as well.

In summary, the historical records indicate that Huna Tlingits have utilized Glacier Bay for subsistence activities throughout the historic period despite legal sanctions, which technically preclude many of these activities in recent decades. Huna Tlingits thus maintained their connection to Glacier Bay with varying degrees of success

by continuing to participate in permitted activities, such as fishing and berry picking, while at the same time conducting other activities out of sight of park officials. At the root of this perseverance is the deep spiritual connection of the Huna Tlingits to their homeland, their recognition that the most effective and meaningful way to maintain this integral connection is through subsistence activities, and their ability to adapt subsistence strategies and technologies within an ever changing social and legal framework.

Huna Tlingit Subsistence Patterns

Tlingit subsistence, and Huna Tlingit patterns in particular, are described in the following sources: Catton (1995, 1997), de Laguna (1960, 1972, 1990), Emmons (1991), Goldschmidt and Haas (1998), Jacobs and Jacobs (1982), Krause (1956 [1885], edited by E. Gunther), Moss (1993), Newton and Moss (1984), Oberg (for Klukwan, Sitka, and Wrangell 1973), Schroeder (1995), Schroeder and Kookesh (1990), Swanton (1908), Trager (1939), and Thornton (1995a, 1997a, 1998, 1999). Latin and Tlingit names for all species mentioned are listed in Appendix 5.

It is essential to note that for the Huna people, subsistence was far more than an economic activity; it was also a "moral and religious occupation" (de Laguna 1990:209). For example, "The hunter had to purify himself [before hunting] by bathing, fasting, and continence, [and] to refrain from announcing what he hoped to kill …" (de Laguna 1990:210). "No animal … should be slain needlessly, nor mocked, nor should the body be wasted" (de Laguna 1990:209). "Fish had to be treated with respect and the offal returned to streams or burned to insure their reincarnation" (de Laguna 1990:210). Berries were believed to have an "inner form" or spirit (*yeik*), which must be treated with respect (Thornton 1999:36).

Traditional practice included explicit conservation provisions. For example, "Kake people hunted sheep at three places but were careful not to visit the same place for two years, to conserve the game" (de Laguna 1990:210). "Patchy" resources of critical importance, such as salmon spawning areas, halibut-fishing grounds, and berry patches were owned by families who monitored such resources and controlled access to them. A number of key resources were cultivated by weeding (strawberries), fertilizing (berries), and transplanting (soapberries, salmon, deer). (Thornton 1999:4; Herman Kitka pers. comm. June 5, 1998; Pat Mills pers. comm. Nov 6, 1998). In all these activities, sharing was of the essence: "Each woman marked her fish with distinctive cuts and kept her bundles separate in the cache, taking pleasure in sharing them with housemates or visitors" (de Laguna 1990:210).

Fish were the primary resource category of traditional Huna Tlingit subsistence. According to Murdock's *Ethnographic Atlas* (1967:106), fishing (including shell fishing and marine-mammal hunting) accounted for between 56% and 65% of Tlingit subsistence dependence; hunting of large land animals (trapping and fowling) accounted for between 26% and 35%; while gathering of plants and small land animals (possibly including birds' eggs) accounted for the remaining 6% to 15%. These *Ethnographic Atlas* estimates reflect the relative emphasis placed on each resource category in the ethnographic records of the Tlingit, "with special reference to the Chilkat" (Murdock

67:33).[4] However, the proportions are probably systematically biased to emphasize male harvest activities (Hunn 1981; Moss 1993), exaggerating somewhat the importance of hunting at the expense of gathering. Thornton (1999) has shown that the quantitative contribution of a resource to Tlingit subsistence does not necessarily reflect the cultural significance of that resource for local people. For example, berries have profound spiritual and social significance for Huna Tlingit people despite their low ranking in Murdock's scale. Nevertheless, the quantitative predominance of fish in the Huna Tlingit diet is undeniable.

Outstanding fish species were the five salmon species (each with its own Tlingit name) and halibut, with Pacific gray cod, red snapper, herring and eulachon also noteworthy. Herring provided eggs in spring and an early salmon run in July was followed by a series of runs by several species from September through November. During these months, Huna families camped at their respective sockeye streams (Newton and Moss 1984:4). They caught returning salmon in weirs and by gaffing. Later-spawning fish were preferred for smoke drying (Newton and Moss 1984:5-6), and a large supply of dried fish provided insurance against winter shortages and supplies for winter potlatches. Herring were also abundant in the fall and were rendered for their oil. By contrast, halibut, and cod were targeted in late winter and early spring, and hooked in

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[4] *Regarding harvest proportions and biases, one could also cite the differences between island and mainland groups (the former being typically more dependent on bottomfish and sea mammals than the mainland groups, such as the Chilkat; Yakutat being an exception with regard to sea mammals) and also note that contemporary ADF&G harvest estimates for Southeast Alaska rural (both Native and non-Native) communities show similar proportions in harvests (but also similar biases towards fish and game). A cursory check of the ADF&G Community Profile Database (now online) shows the following harvest proportions for 1996 in Hoonah, their most recent and "most representative" year; estimates are rounded to the nearest tenth, with the most significant items under each category in parenthesis: Salmon, 30.4% (6 to 8% for each of the five species, with pinks commanding just over 1%); Non-Salmon Fish, 18% (halibut 7.7%); Land Mammals, 21.7% (deer 20%); Vegetation, 8% (berries 6.6%, seaweed 1%); Marine Invertebrates, 15.7% (crabs 5.5%, clams 4.3%, cockles 4.3%); Birds and eggs, 0.2% (with eggs 0.02%). ADF&G-CPDB. 2000. Community Profile Database. Juneau: Division of Subsistence, Alaska Department of Fish and Game.*

deep water. Because food supplies could be scarce during this season, halibut and cod were critical seasonal resources but uncertain, as poor weather might sharply reduce the harvests. Herring spawn in April and Hunas collected their eggs on hemlock branches placed in shallow water (de Laguna 1990:211).

Fish, often in abundance, were prepared in a variety of ways. If carefully smoke-dried (over fires of dry hemlock and green alder [Newton and Moss 1984:5]), the supply would last through the winter without spoiling. Dried salmon was a valuable trade item exchanged with inland groups for eulachon grease or mountain goat meat. Virtually all parts of the fish were eaten, including the heads, which could be "pickled" by burying them in the tidal zone sand for several weeks (Newton and Moss 1984:8-9).

Hunting was mostly a late fall activity, though bears were preferred in late winter or early spring, when their hides were in prime condition (de Laguna 1990:209), and seals in mid-summer. Sitka black-tailed deer were hunted in the mountains south of Hoonah from September through November. Deer were in prime condition at this time, fat and with thick coats (Newton and Moss 1984:13). Toward the end of the season, deer were leaner and thus could be more readily dried for winter. At the same time, "Mountain goats… were hunted for their fat… their horns, and the goat wool for blankets" (de Laguna 1990:210).

Harbor seals were targeted in summer. Huna people were considered "expert sealers, exporting skin and oil to other Tlingit" (de Laguna 1990:210). Glacier Bay was one of the best sealing grounds in southeastern Alaska (de Laguna 1990:210). Seals provided meat, hides and oil. Two hundred harbor seals were said to have been harvested annually by Huna hunters (cf. Wolfe et al. 1993). Fur seals, sea lions, sea

otters and porpoise might also have been hunted, though by 1825 sea otters were locally extirpated (de Laguna 1990:210). Huna Tlingit also trapped mink on the Inian islands, and both mink and river otter on Yakobi and Chicagof islands. Hoary marmots ("mountain whistlers") and porcupines were hunted at Bartlett Cove; marmot, marten, wolverine, and wolf were hunted in Beartrack Cove. Birds were also hunted, e.g., ducks and geese at Mud Bay. Contemporary resources for Huna Tlingit families include commercial and subsistence fishing and the harvest of shrimp and crab, including Dungeness, Tanner, and King.

As noted, fall was a time of abundance, providing skilled and provident families ample dried fish, oil, and meat for winter. In contrast, late winter and spring was a period of relative scarcity (Newton and Moss 1984:1). However, in addition to halibut and cod, shellfish and a variety of roots and greens were widely available. Cockles, butter clams, horse clams, littleneck clams, mussels, abalone, chitons ("gumboots"), limpets ("Chinese slippers"), sea urchins, and several seaweed species could be harvested along sheltered interior shores from winter through the "grouse month," that is, roughly April, when the calls of grouse signaled the onset of dangerous "red tides" making consumption of certain harvested shellfish questionable. Small clams were eaten raw in winter to "clean out the system." Wild sweet potatoes, wood fern rhizomes, nettles, Indian celery (*Heracleum lanatun*), Indian riceroot (*Fritillaria camschatcensis*) Indian rhubarb (*Polygonum alaskanum*), and the sweet inner bark of the hemlock were harvested in quantity in spring. These contributed scarce carbohydrates, sugars, and vitamins A and C to the diet (Newton and Moss 1984: Table II; 25, 41). Following European contact, potatoes, carrots, and rutabagas planted in spring gardens supplemented these wild vegetable

foods. Huna people harvested a great variety (nineteen species) and abundance of berries in summer and fall, many of which were dried for later consumption. Berries eaten with fish or seal oil were a delicacy at winter feasts, with soapberry or "Indian ice cream" most highly prized (Thornton 1999:29-30).

Gull eggs had their place among this abundance of traditional riches. Though gull eggs were not notable in terms of their quantitative contribution to the diet, nor were they of outstanding ritual significance, they were highly appreciated and are now fondly remembered with respect both for how they marked a turning point in the subsistence year and for the way they brought families together.

For many hunting-gathering peoples, food species symbolically represent the particular places where they are harvested (Hunn 1996; Thornton 1997b; Thornton 1999). This is especially true among the Huna Tlingit, who harvest each resource with and for family, house, clan, and tribe, and for whom harvest places are elements of a sacred landscape. Huna people today view gull egg harvests as exceptionally important, not just for food values, but for their power to define who the Huna are as a people and to sustain their ties to their ancestral lands and waters in and around Glacier Bay.

Seasonal Harvest Patterns

Hunting-gathering subsistence economies are characterized by a "seasonal round" in which families move across their traditional terrain in response to the maturation and movements of plant and animal resource species. Catton summarized the traditional seasonal round for the Huna Tlingit as follows:

> When stores ran low in early spring, a Tlingit family group would pack the canoe and venture out of the village, beginning with a seal hunting expedition of several weeks' duration. By April, the group could be

gathering green plants and edible roots or the potatoes they had planted on some sunny hillside the previous year. In May they might go on a trading expedition, followed in June by berry picking,[5] and gathering birds' eggs. In late June and July, during the first salmon run, the men fished and hunted seal while the women dried the meat and sealskins and rendered the seal oil. August was devoted to more food storage and in September they followed the second salmon run. Late fall was the time for hunting and trapping. Finally, as winter approached, they returned to the village for a season of potlatches, trading expeditions, crafts, and repairing of fishing gear. (1995:18)

Tlingit people themselves describe these seasonal patterns in Newton and Moss (1984). Henry Katasse of Petersburg notes:

> There are seasons for vegetables, greens, seasons for fat, seasons for shellfish, and seasons for many things when it's time for us to eat and enjoy them.... We never bothered anything out of season.... (Newton and Moss 1984:1)

George Jim of Angoon elaborates:

> In September, October, and November, it is the time of contentment and happiness among the Tlingit people, for it is harvest time. Deer, goat, sheep, bear, king salmon, herrings, every species of salmon is fat, ready to be harvested, and plentiful.... (Newton and Moss 1984)

Walter Williams of Kake adds:

> Times could be rough for my people in the early spring. If you are inclined to be lazy you go hungry.... Your winter supply of dried fish is gone, the weather is bad, and your entire food supply is pretty low.... (Newton and Moss 1984)
>
> Thus, the first spring harvests of gull eggs, herring eggs, and seaweed were very welcome and defined the transition from a season of confinement and scarcity to a season of movement and abundance.

Timing of harvests required close observations of environmental changes, as Lydia George of Angoon notes:

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[5] *According to Thomas Thornton, who has written widely on the Tlingit use of natural resources in Glacier Bay, the earliest berries were not mature until July.*

> One person was delegated to be responsible for the fish. Every day, he watched the ocean beach for fish jumps and kept track of all movements of the fish. No one was allowed to kill fish before they came upstream to spawn, they believed if the fish was bothered and disturbed during their migration upstream to spawn, they would turn back and go up another river…." (Newton and Moss 1984:4)

Hunting was also seasonal, as Henry Katasse explains:

> In the month of September, deer meat is at its prime…. [L]ater, in November, the deer loses some of its fat and this was the time to smoke and dry them for winter…. During the fall of the year, the hide is thicker; you can make soles out of the hide from the neck area…. (Newton and Moss 1984:13)

George Jim adds:

> Around the first part of September men prefer to climb mountains in order to obtain their venison. The deer feed on deer cabbage or deer lettuce and other favorite foods … the meat is at its best at this time. (Newton and Moss 1984:13)

Winter harvests of some shellfish (not including cockle) were halted in early spring to avoid shellfish poisoning. George Davis of Hoonah explains: "[W]hen the grouse hoots, it is time to stop eating clams. In Tlingit, this is called *Nakt*, 'grouse-clams,' Newton and Moss (1984) note that, "[a]ccording to the southeastern Tlingit, whenever the herring spawn, it is time to stop eating all shellfish…. Everyone just accepts it and leaves all seafood alone [probably referring to shellfish only]. Clams are mostly dug in the winter months" (Newton and Moss 1984:17).

Early spring is also seaweed season. Henry Katasse says: "When alder leaves are fully grown, it is time to go after *lak̲'úsk* [black laver, *Porphrya* sp.] for winter use…." (qtd. in Newton and Moss 1984:18). Katasse likewise reports on another important terrestrial plant food:

> The dead leaves are usually laying on top of the ground when *tséit* [*Potentilla anserina,* Pacific silverweed] are dug – usually as soon as the

> snow melts in the month of March – before the plants start growing… this is when they are tasty and sweet. (qtd. in Newton and Moss 1984:20)

William Nelson suggests a somewhat later harvest season: "*Tséit* is picked in the spring while tender, in April and May" (Newton and Moss 1984:21). Even trees cut for totem poles and canoes had their season. Henry Katasse notes:

> The first of February was the time to fall [*sic.*] trees – red cedar and yellow cedar were spotted during summer because during the winter there was plenty of snow…wood for totem poles and canoes will not check this time of year. (qtd. in Newton and Moss 1984:26)

Newton and Moss summarize for the Tlingit as a whole:

> The Tlingit people were quite mobile. The principal village was where the winter was spent, this was the time to manufacture and maintain all the tools and household goods used throughout the year. Shellfish beds close to the village were harvested for fresh meat as people drew upon their cached provisions…. In late winter people might venture out on the water for deep-sea fishing and seaweed collecting. Later, it was time to collect herring spawn, different seaweeds, and a variety of plants. People might take a break from food procurement in early summer, taking advantage of the good weather to travel and visit distant relatives. By mid-summer, salmon fishing had begun in full force. Finally, in the fall, the families moved to their fish streams where intense harvesting and processing of salmon, meat, and berries took place. (1984:32)

De Laguna (1990:206) cautions that "[n]o one annual cycle of activities was true for all the different local groups, and every community offered a choice of occupations at any given time, so that different families might follow different pursuits during the same period."

Huna Tlingit gull egg harvests fit into the local pattern of seasonal harvests. Gull eggs were taken during a brief window of opportunity between mid-May and mid-June, during the initial egg-laying phase at the gull colonies. The timing of these harvests was critical. Given the tight synchronization of egg laying in the gull colonies (described in

more detail below), optimal harvests with maximum numbers of fresh eggs were possible only for a very limited time. Gull egg collecting trips heralded the arrival of good travel weather and release from the period of late winter and early spring food shortages. For Huna people, it was a particularly exciting time, especially for children, who participated actively in the gull egg harvests.

Bird Egg Harvests and Traditional Land and Resource Rights

There are four main matrilineal clans in the present-day Huna Tribe that stem from Glacier Bay. Thornton notes (1999:34):

> Tlingit history relates that Glacier Bay was settled originally by what are today four distinct matrilineal clans of two reciprocating moieties: the *Chookaneidi* ("People of Chookanhéeni" or "Beach Grass Creek," a reference to Berg River/Bay; spelled Tcukanadi on Map 1), the *Kaagwaantaan* ("People of the Burned House"; not indicated on Map 1), and the *Wooshkeetaan* ("People with Houses on Top of One Another"; spelled Wuchitan on Map 1) of the Eagle/Wolf moiety; and the *T'akdeintaan* ("People of the *T'akdein Satan* [a village name]; spelled Dakdentan on Map 1) of the Raven moiety. A fifth group, the *Kuyeikeidí* (People of *Kuyeik* [Excursion Inlet]), also of the Raven moiety but now extinct (or perhaps transformed into the *Lukaax.ádi* of Haines…), reportedly dwelled at Excursion Inlet.

Catton (1995:14) observes disagreement among ethnographers on the number of Huna clans: "John R. Swanton listed six clans, three of each moiety, in 1904. Frederica de Laguna named nine clans. Theodore H. Haas and Walter R. Goldschmidt … in 1946 … subdivided the area into just three clan territories…." (see Appendix 6). It is the judgment of the authors that these apparent disagreements, which are no doubt partly a reflection of the dynamic and shifting constitution of multi-local clans and the historical exigencies of Tlingit settlement and migration patterns, are of no significance to the issue at hand.

Specific clan claims are asserted in part by legendary accounts. Catton summarizes:

> The Glacier Bay story of the *Tcukanadi* (= *Chookaneidi*) … recalls a time when the basin [of the east arm of Glacier Bay] held a glacier and freshwater lake at one end, from which a large river flowed to the sea. Geologists have found evidence of such a lake… while ecologists have discerned from relic tree stumps the prior existence of a lowland spruce and hemlock forest. The clan legend tells of an ancestral village in this valley where the *Tcukanadi*, together with three other clans, enjoyed an abundance of all kinds of salmon. Their occupation of this place came to a swift end when a teenage girl of the village, weary of her confinement during menstruation, whistled through some charmed fish bones to beckon the glacier's spirit. Once set in motion, the glacier was unstoppable…. The four clans [then] separated, and while three established villages at points along Icy Strait, the fourth clan, the *Tcukanadi*, went to the present site of Hoonah. (1995:16-17)

Niblack (1890), speaking of Haida and Tlingit, asserts "each [egg-harvest] location is preempted by particular families, and considered hereditary property, which is handed down from generation to generation." However, in Glacier Bay, where the Chookaneidi and Wooshkeetaan clans claimed territories, and all clans occupied the villages in Bartlett Cove, this was not the case. There is no evidence that members of other clans resident at Hoonah were ever excluded, nor that they had to obtain explicit permission from Chookaneidi leaders to harvest eggs at sites in their territory. Elder Frank Wright explains:

> … as far as owning it, no. The only ones that claim it is *Chookaneidi*. Only because of [the legendary girl] Kasteen. A lot of us came out of there. *Chookaneidi*, they lived on one side of that river [when Glacier Bay was above sea level] …. And *Kaagwaantaan*, some of us lived on this other side, just up, further up. But they still claim the whole thing…. We never asked them. They know themselves [that we are] all out from there. So we don't have to ask their permission…. Probably from the other towns, like Angoon or Haines or Klukwan, any other town, they have to ask permission…. That was in the old days. (personal interview)

Thus, the right to harvest eggs in Glacier Bay is essentially a "tribal" (*kwaan*) right, since parties from Angoon or Sitka would not presume to harvest there without explicit permission of the Huna, or, in particular, from a *Chookaneidi*. It is possible that ownership was expressed differently before the 20th century consolidation of clans at the Hoonah village site. By contrast, key berry patches in Glacier Bay were recognized as the property of families (or matrilineages) who had the right to regulate access to those sites. No such ownership is asserted for any seabird colony, with the possible exception of Boussole Head on the outer coast where a large Black-legged Kittiwake colony symbolized the T'akdeintaan clan's original settlement in the region and they claim ownership for the place, crest and stories. (The kittiwake, a.k.a. ***kh'éikh'w*** or "sea pigeon," is a *T'akdeintaan* clan crest.)

Salisbury's statement (1962) that, "each clan [has] their own special preserve [for 'seafowl' egg harvests]" may be true on Forrester Island, but does not accord with local Huna testimony regarding the Marble Islands. Under what conditions might one expect clan-based (or individual) territoriality with respect to resource access versus "open access" (to all members of some regional grouping, in this case)? Forrester Island is much larger, supports a much greater total resource base, and was used by Klawock Tlingit and Kaigani Haida groups. As far as the authors can judge, the Marble Islands egg-gathering territory was not restricted by clan ownership (though berry patches in Glacier Bay might have been). The authors hypothesize this did not happen because the gull egg resource on the island was not sufficiently abundant to allow territorial partitioning among the Huna clans (Dyson, Hudson and Smith 1978). A closer analog to the Huna use of the Marble Island colonies may be Haenke Island in Yakutat Bay (see de

Laguna 1972:395). Here a single, concentrated, high-quality resource site was located close to the village. It was used by all the villagers. Certain other islands in Sitka Sound similarly served as a communal source of eggs for all clans dwelling in Sitka, even though the surrounding body of water was claimed by one clan (Thornton pers. comm. 1998).

Tlingit property rights over bird egg-harvesting sites and other key resources areas were not static but rather flexible and adaptive to the material conditions of economic and social life. The evidence from contemporary Hoonah residents suggests that rights to harvest eggs at a particular locale extended to all members of clans dwelling in that particular region or kwaan (i.e., Huna Kawoo or territory), and that non-local Tlingits could gain access to egging sites through local kin ties or at the discretion of local groups. Historically, it is possible that more exclusive clan rights were exercised over specific egging sites, but the authors hypothesize that in Huna territory, the benefits of partitioning and defending such small resource patches generally were outweighed by the costs in the contemporary era. More generally, it is important to note that in the 20th century kwaan-level rights have become increasingly important due to the consolidation of Tlingits into permanent villages and their organization into tribal governments basically along traditional kwáan lines (see Thornton 2001). The matrilineal clan and house group remain foundational social units in Tlingit society, and their prerogatives over material resources and other property are still forcefully articulated and respected, even in places such as Glacier Bay where occupancy of traditional lands has ceased.

"Traditional Egg-Harvesting Practices of the Huna Tlingit"

By the 1960s the Glacier Bay National Monument administration began to more effectively enforce the prohibition on gull egg harvests within the park. This is not to say that clandestine harvests did not and do not take place. However, these harvests are performed by individuals acting surreptitiously. They have no formal community support and therefore cannot be construed as cultural practices of the Huna community, despite the fact that there may be considerable understanding within the Huna community as to why people are motivated to behave in this manner and sympathy for those who harvest eggs surreptitiously. Furthermore, the need for secrecy likely precludes applying the "traditional" harvest management strategies that we document here.

With the exception of legally permitted egg harvests in the Inian Islands in 2001 and 2002, "traditional" Huna egg-harvesting practices are those recognized as legitimate by Huna Tlingit people prior to the 1960s. These practices varied through time as a consequence of changing environmental and social circumstances. This research details traditional practices reported by living Tlingit adults who participated in family egg-collecting expeditions primarily during the 1930s, 1940s, 1950s, and the early 1960s. A consensus as to how those harvests were properly conducted is described in detail in this report as well as several less frequently described alternative practices.

It is clear that earlier generations of Huna Tlingit must have acted somewhat differently in harvesting gull eggs compared to that which we have described. In particular, we infer that the following historic changes in the context of this practice are relevant:

1) Before the modern era of commercial seine fishing, Huna collecting parties would not have been able to use large powerboats to transport family members to harvest sites. This fleet in Hoonah dates to the 1920s and reached a peak of ca. 50 seine boats in the 1950s, but the fleet has since declined to four or five active boats. (It has been significantly reduced in number recently due to the dynamics of the commercial fishing industry in southeastern Alaska.). Before large mechanically powered craft were widely available, egg-harvesting parties would have traveled by canoe and would have had to camp either on the gull nesting islands or nearby. Gull egg harvests would most likely have been less concentrated at regionally outstanding sites due to the greater effort involved in getting to, and staying at, the harvest sites.

"Traditional Egg-Harvesting Practices of the Huna Tlingit, continued"

2) In the 19th century the local Tlingit population was not concentrated in a single winter village but dispersed among several sites. These various winter villages were likely strongly linked to particular clans. Given this early historic settlement pattern and the absence of powerboats, harvests would most likely have been less concentrated at the Marble Islands. Colonies in Icy Strait and on the outer coast would likely have been only exploited by nearby villages instead of all local Tlingit focusing on the primary regional colony.

3) Since Glacier Bay's glaciers have been in rapid retreat since ca. 1800, the location of gull-nesting colonies, their topography and overall abundance have also been in flux throughout the historic period. Of particular note are the demise of the Strawberry Island colony and recently the North Marble Island colony (since ca. 1972) and the somewhat earlier demise of colonies in the Beardslee Islands and on Willoughby Island. It is likely that these recent changes in the availability of gull eggs are due to natural succession of the vegetation at these locations rather than to human disturbance. At the same time new gull colonies have been established, they are less accessible to Huna people (being far up Glacier Bay and on inaccessible cliffs) than the defunct colony sites. As a consequence, the number of nesting gull pairs subject to regular Huna traditional harvest is now less than in the past, despite the fact that gull populations throughout southeastern Alaska have been increasing as indicated by Christmas count data.

4) The introduction of refrigerators and freezers has lessened the importance of earlier food storage techniques. This, and the reduction in gull nesting colonies due to ecological succession, has made obsolete the long-term storage of gull eggs in seal oil and by other means described in detail later in the report.

These and perhaps other changes in the social, political, and natural environment should be kept in mind when assessing what is "essential" to Huna Tlingit traditional egg-harvesting practices.

Eugene Hunn

IV. SUMMARY OF THE BIOLOGICAL LITERATURE CONCERNING THE POPULATIONS AND DISTRIBUTION OF RELEVANT BIRD SPECIES WITHIN THE HUNA TLINGIT TRADITIONAL TRIBAL TERRITORY[6]

Resources consulted for general information on bird-species distributions in North America and Alaska include the 7th edition of *The A.O.U. Checklist of North American Birds* (AOU 1998), Kessell and Gibson (1978), and Armstrong (1983). Information on nests, eggs, and reproductive behavior for the relevant species is from A. C. Bent's classic life histories (for gulls, 1963 [1921]); Ehrlich, Dobkin, and Wheye (1988); Verbeek (1993); and Baicich and Harrison (1997). References consulted for studies relevant to optimal clutch sizes in gulls and effects of disturbance at gull colonies include Bosch et al. (2000); Drent and Daan (1980); Ickes, Belant, and Dolbeer (1998); Kennedy (1991); Monaghan and Nager (1997); Nager, Monaghan, and Houston (2000); Olijnyk and Brown (1999); Reid (1987); Shugart and Scharf (1976); and Wanless et al. (1996). Zador's recent research at the South Marble Island Glaucous-winged Gull colony (Zador and Piatt 1999; Zador 2001) is most valuable in this context. For waterfowl information, Madge and Burn (1988) was consulted. Winter bird distributions are suggested by the Christmas bird censuses published by the National Audubon Society (e.g., NAS 1997).

The Glacier Bay National Park Bird Checklist (hereafter, the Checklist), revised 1986, lists 223 species known to have occurred in the GBNPP since formal bird

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[6] *This section of the report covers Task 1, Research Questions 2, 3, 6, and 7, in part, and is also pertinent to Task 2 of th subagreement that authorized the research. See Appendix 1.*

observations began. The Checklist also indicates in what part of the park the species occurs and whether it is known to nest or is suspected of nesting (see Table 4). This list is used to determine which species might have been targeted for their eggs and to rank those species in terms of the likely subsistence value of their eggs to the Huna Tlingit.

Table 4. *Species of Aquatic Birds Known to Nest or Suspected of Nesting in Glacier Bay National Park (Checklist, GBNPP 1986).**

Species	NS	A	Tlingit name	Nesting pattern
Common Loon	?	c	kaghit	dispersed
Red-throated Loon	n	u	yeekaghá̱axhi	dispersed
Fork-tailed Storm-Petrel	n	-	ghanook	colonial, in burrows
Leach's Storm-Petrel	?	-	ghanook	colonial, in burrows
Pelagic Cormorant	n	a	yookh	colonial
Double-crested Cormorant	?	-	xh'adaaxh'aan ?	colonial
Great Blue Heron	n	r	laxh'	colonial
Canada Goose	n	u	t'aawákh	colonial
Green-winged Teal	n	u	atsik'íye ?	dispersed
Mallard	n	c	kindachooneit	dispersed
Pintail	n	u	no name recorded	dispersed
Northern Shoveler	?	r	s'elasheesh ?	dispersed, rare
Lesser Scaup	n	r	atsik'íye ?	rare
Common Eider	n	v	no name recorded	dispersed
Harlequin Duck	n	c	s'ús'	dispersed
Long-tailed duck	?	u	yaa.aa.uné / aa.aa.uné	dispersed
Barrow's Goldeneye	n	c	hinyikgáaxu	dispersed, cavity-nester
Common Merganser	n	c	salxúts/ shalxwáts	dispersed, cavity-nester
Red-breasted Merganser	n	u	chaaxh/ khaaxh ?	dispersed
Semipalmated Plover	n	u	sedaadakh'éedaa	dispersed
Killdeer	?	r	no name recorded	dispersed
Black Oystercatcher	n	c	ɬugún	concentrated
Greater Yellowlegs	n	u	no name recorded	dispersed
Lesser Yellowlegs	n	r	no name recorded	dispersed
Solitary Sandpiper	n	r	no name recorded	dispersed

Table 4. *Continued*

Spotted Sandpiper	n	c	no name recorded	dispersed
Least Sandpiper	n	u	hinxhukadzéedzi	dispersed
Common Snipe	n	u	lu.áadaa	dispersed
Parasitic Jaeger	n	u	lawuxh	dispersed
Mew Gull	n	c	kootl'éet'aa/ kool'éit'áa	loosely colonial
Herring Gull	n	u	kéidladi	colonial
Glaucous-winged Gull	n	c	kéidladi	colonial
Black-legged Kittiwake	n	c	kh'eikh'w	colonial
Arctic Tern	n	c	kichyaat	colonial
Aleutian Tern	n	v	no name recorded	very rare
Common Murre	n	u	kéel	colonial
Pigeon Guillemot	n	a	xj'adaaxh'aan	concentrated
Marbled Murrelet	?	a	ch'eet	dispersed
Kittlitz's Murrelet	?	u	ch'eet	dispersed
Tufted Puffin	n	u	xhík	colonial, in burrows
Horned Puffin	n	r	lugwáach'/ lugk'wát	colonial, in burrows

* NS = nesting status: n = known to nest; ? = suspected of nesting. A = abundance during the nesting season: a = abundant, c = common, u = uncommon, r = rare, v = very rare, "-" (minus sign) = not listed. § Nesting patterns are abstracted from information in Ehrlich, Dobkin, and Wheye (1988) and Baicich and Harrison (1997). Species in bold provided eggs for harvest. Blanks indicate information could not be confirmed.

Though 39 species of aquatic birds may nest in Glacier Bay National Park and Preserve, most populations were too small, dispersed, rare, or their nests too difficult to access for their eggs to have been harvested in significant numbers (see Table 4). Eight of these species are unambiguously identified as providing harvestable eggs. In addition, one terrestrial species, the blue grouse, might be added to this list. All species with eggs known to have been harvested by Huna people (indicated in boldface type) are rated as abundant, common, or uncommon on the latest GBNPP bird checklist (GBNPP 1986). Why have eggs of other equally common nesting species not been harvested? One factor

appears to be that colonial nesting species are favored over species that disperse to nest, such as loons, many ducks, shorebirds, and the Parasitic Jaeger.

Historically, the location, size, and species composition of Glacier Bay seabird nesting colonies must be inferred from park staff and visitors' incidental observations. The most valuable of these is Superintendent Been's notes of his 1940 tour of southeastern Alaska. Patten's studies in 1972 and 1973 of breeding Glaucous-winged and Herring Gulls on the Marble Islands in Glacier Bay were the only detailed observations of local nesting colonies until Zador's recent work (Zador & Piatt 1999; Zador 2001). Sowls et al. in 1982 surveyed seabird colonies in the outer coastal portion of the Huna Tlingit territory. Ten of a total of eleven seabird colonies surveyed in area 010 (from Cenotaph Island in Lituya Bay south to Lisianski Inlet) contained a total of 1,494 nesting Glaucous-winged Gulls (747 nests) (Sowls et al. 1982) (see Table 5).

Table 5. *Numbers of Nesting Seabirds Along the Outer Coast Between Lituya Bay and Lisianski Inlet (area 010) During a Boat Survey in 1982 (Sowls et al. 1982).*

Species	numbers of individuals nesting	number of colonies
Storm-petrel	unknown	1
Glaucous-winged Gull	1,494	10
Black-legged Kittiwake	2,182	8
Pelagic Cormorant	224	3
Tufted Puffin	64	3
Horned Puffin	22	2-3

Of those species reported to have been exploited for their eggs, Glaucous-winged Gull eggs were more frequently harvested than all the other species combined. This makes sense in light of the large size of Glaucous-winged Gull colonies, the accessibility of the nests, and the size of the eggs. Only the Canada Goose has larger eggs than this

gull and, of the rest, only the puffins come close to it in size.[7] Though Canada Geese lay an average of five to seven eggs per clutch, compared to three for the Glaucous-winged Gull, they do not nest in dense colonies and they hide their nests well (see Table 6).

Table 6. *Bird Species with Eggs Reported or Suspected to Have Been Harvested by the Huna Tlingit.*

Species	length x width (mm)*	cc/egg§	volume ratio - to chicken egg	modal clutch size
Pelagic Cormorant	59 x 37	38.45	0.95	3-5
Canada Goose, race fulva	83 x 55	119.51	2.95	5-7
Mallard	58 x 41	46.41	1.14	10-12
Blue Grouse	50 x 35	29.16	0.72	6-8
Black Oystercatcher	56 x 39	40.54	1.00	2-3
Mew Gull	57 x 41	45.61	1.13	3
Herring Gull	70 x 48	76.77	1.89	2-3
Glaucous-winged Gull	73 x 51	90.85	2.24	3
Black-legged Kittiwake	56 x 41	44.81	1.11	2
Arctic Tern	40 x 29	16.01	0.39	2
Pigeon Guillemot	61 x 41	48.81	1.20	2
Marbled/Kittlitz's Murrelet	60 x 36	37.01	0.91	1
Tufted/Horned Puffin	72 x 49	82.29	2.03	1
domestic chicken †	56 x 39	40.54	1.00	-

*Egg sizes are as reported in Baicich and Harrison (1997), except for the Canada Goose, which is estimated by proportional interpolation between sizes of "large" and "small" races. § Egg volume is calculated from length and width according to the formula Volume = 4.76 x length x (width)2/10000 (Zador 2001:6). †Cited for comparative purposes.

The following is a review of the biological literature pertaining to bird species of interest to the Huna in their traditional use area. Prior to 1999 there was limited

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[7] *Herring Gulls are not distinguished from Glaucous-winged Gulls in this discussion. The Herring Gull is closely related to the Glaucous-winged Gull and may freely hybridize with the latter where their breeding ranges overlap. However, just ten Herring Gull pairs were noted in the North Marble Island colonies in 1972 and fifteen in 1973, which constitutes a mere 1.0% to 1.5% of the Glaucous-winged Gulls at the colony (Patten 1974:18). One "typical" Herring Gull pair was noted, together with seventeen mixed pairs, of a total of 452 pairs sampled in 1972 and 1973 (Patten 1974:22). There is no evidence that Huna Tlingit distinguish between these two very similar species, which is not surprising, since pure Herring Gulls are far outnumbered by the hybrids, which show every combination of intermediate characteristics.*

biological data on Glaucous-winged Gull nesting in and near Glacier Bay. In 1999 and 2000, however, the research funded by NPS and conducted by Stephani Zador and John Piatt on the South Marble Island population (Zador & Piatt 1999; Zador 2001) provides essential information—especially about the effects of egg loss caused by both human and avian predators. In addition, information on bird distributions in Glacier Bay was provided to Hunn by GLBPP staff in June 1998.[8] The remainder of Chapter IV provides species accounts that complement the information provided above.

CHARADRIIFORMES

The Charadriiformes includes the suborder Lari (family Laridae: gulls and terns), the suborder Charadrii or "shorebirds" (various families), and the suborder Alcae (family Alcidae, the alcids). These groups are treated in sequence below.

LARIDAE: GULLS AND TERNS

Glaucous-winged [*Larus glaucescens*] and **Herring Gull** [*L. argentatus*]

These are known in Tlingit as ***kéidladi***. Respondents questioned with respect to the difference between Glaucous-winged and Herring Gulls did not appear to recognize any distinction. Herring Gulls are greatly outnumbered by Glaucous-winged Gulls in the Glacier Bay colonies. Occasional hybrid pairs occur (Patten and Weisbrod 1974).

Glaucous-winged Gulls (Photograph 3) are colonial nesters, preferring to nest on "coastal cliffs, grassy slopes, bare flats esp. on small islands" (Ehrlich, Dobkin, and

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[8] *Glacier Bay NPS staff members interviewed by Eugene Hunn in June, 1998 were Rusty Yerxa, Mary Dralovec, and Elizabeth Hooge.*

Wheye 1988:176). Egg laying within a colony is tightly synchronized. Patten suggested that "colonial nesting and synchronization of egg-laying have an anti-predator function" (1974:38). He notes that at the North Marble Island colonies, "[I]ncubation did not begin until after the clutch of three was completed, about a week after the first egg was laid. The onset of incubation was also synchronized in all colonies, and began immediately after the peak egg-laying week" (1974:40).

Photograph 3. Glacous-winged Gulls.

Baicich and Harrison state that a full clutch of Glaucous-winged Gull eggs is "usually 3, often 2, rarely 4" [of which the latter may represent nests tended by two females (Reid 1987:8)]; a Herring Gull clutch is "usually 2-3" (1997:155, 157). Patten's study of 353 nests at North Marble Island Glaucous-winged Gull colonies reported the average completed clutch to be 2.80 in 1972 and 2.96 in 1973 (1974:27). He noted that

"the optimum clutch size in the Herring, Glaucous-winged and Western Gulls is evidently around three but as in other species there is probably some variation in the optimum number from locality to locality as well as from year to year" (Patten 1974:41-42). Zador (2001:24) reported that the control sample laid a higher percentage of three-egg clutches in 2000 (74%) than in 1999 (64%). She also observed that: "Gulls began laying eggs an average of 6 days earlier in 2000 than in 1999… and laid significantly more eggs on average in 2000" (Zador 2001:13). Combining data from non-manipulated nests for 1999 and 2000 (n = 291), she observed that 68% laid 3-egg clutches, 20% 2-egg clutches and 11% 1-egg clutches.

Glaucous-winged Gull eggs average 73 x 51 mm, compared to 70 x 48 mm for Herring Gulls (Baicich and Harrison 1997:155, 157). Freshly laid Glaucous-winged Gull eggs on North Marble Island averaged 97.6 gms (N = 142; Patten 1974:46). Verbeek (1993) reports statistically significant differences in egg mass between the first two eggs of a three-egg clutch and the third egg laid. The first eggs averaged 95.7 gms, the second eggs 95.0 gms, while the third eggs averaged just 87.8 gms (1993:9). Verbeek also reports that the empty shell weighs on average 6.7 gms (1993:9). Thus the edible portion of an egg laid first or second is ca. 90 gms, of the third egg ca. 80 gms.

Large gulls are "indeterminate layers," that is, they "respond to the loss of eggs by laying more" (Ehrlich, Dobkin, and Wheye 1988:165, cf. Kennedy 1991; Zador 2001:2). Gull population control experiments indicate that Glaucous-winged Gulls will initiate a new egg-laying cycle approximately 12 days following the destruction of a completed clutch (Ickes, Belant, and Dolbeer 1998; Stephani Zador pers. comm. Nov. 5,

2001). Extensive re-nesting after heavy predation by red foxes (*Vulpes fulva*) in a Michigan Herring Gull colony has been documented (Shugart and Scharf 1976).

With regard to the impact of disturbance and predation on nesting activities, Patten reports that he "found no adverse effect on eggs hatching resulting from interrupted incubation due to my presence [about once every four days]" (1974:40). He notes that, "The loss of eggs through predation was the principal factor influencing hatching and fledging rate in both years" of his study (1974:43), the principal predator being other gulls in the colony, though he observed predation on eggs by ravens, crows and eagles. "[Bald] Eagles disturbed the North Marble Island gull colonies repeatedly. The approach of an eagle caused immediate high-intensity alarm calls and flight of the entire colony at once" (Patten 1974:52-53). Zador and Piatt (1999:4, 13-14) noted significant Bald Eagle predation on gull eggs, concluding: "Bald Eagles appear to be the primary predators of nesting Glaucous-winged Gulls on South Marble Island."

Despite the disturbances by predators, Patten measured an average fledgling success rate for the North Marble Island colonies of 1.75 and 1.80 per nest, which may be compared with an estimated 0.92 chicks fledged per nest as "sufficient to maintain a stable population" of Herring Gulls at another colony (Patten 1974:64). Patten concludes that, "The gulls on North Marble are reproducing with more than enough fledging to sustain the population.... [T]he high reproductive success accounts for dispersion of young breeding adults to recently deglaciated areas and colonization of marginal sites. The gull population in Glacier Bay certainly possesses the potential for rapid expansion" (Patten 1974:64). Zador (2001) reports similar hatching rates in un-manipulated nests of

1.61 (n = 151, 1999) and 1.81 (n = 140, 2000); however, she did not report fledging success rates.

Trager noted in 1939 that, "[g]ulls nest in very large numbers each spring in the southern part of the area, particularly on North and South Marble islands and the small islands of Geikie Inlet." Been also noted, visiting North and South Marble Islands in August of 1940, that each, "has been a nesting place for seagulls for many years. Gaucase wing gulls [*sic.*] predominated to inclusion [*sic.*] of nearly every other gull except a few haring [*sic.*]" (Been n.d. [1940]:38-39).

Photograph 4. North Marble Island, c. 1998.

Jewett (1942) estimated 100 pairs each on North and South Marble Islands on July 14, 1941. Five hundred nesting pairs were estimated on North Marble Island in both 1972 and 1973 (Patten 1974:18). Though Patten does not estimate the number of nesting

pairs on South Marble Island, he and other observers suggest that the colonies on the two islands are similar in size, as are the islands themselves. Together, the Marble Island colonies were "by far the largest in Glacier Bay" (Patten 1974). Paige (1975) noted that North and South Marble Islands supported by far the largest gull colonies in Glacier Bay in 1975 – a year in which nesting failed completely. He estimated 1000 nests on North and South Marble Islands together (Zador and Piatt 1999:20). In 1999 and 2000, Zador (2001:5) estimates approximately 700 Glaucous-winged Gulls nesting on most of the un-forested area of South Marble Island. Presumably, due to ecological succession, North Marble Island no longer supports significant numbers of nesting Glaucous-winged Gulls. Zador and Piatt (1999:20) counted only 25 birds on the grassy slope on the southwest corner of this island on May 24, 1999. Furthermore, Zador (2001:27) notes that the forest on "South Marble Island appears to facilitate eagle predation.... Gulls often mobbed the eagles in the air, but usually stopped when the eagles landed in the trees." Thus, ecological succession may also increase predation on eggs at the surviving colonies.

Other colonies past and present in Glacier Bay include: Johns Hopkins Inlet; Tlingit Point; Margery Glacier (E. Hooge pers. comm. June 5, 1998); Lone Island (big colony, 1991-1996+); Drake Island (1995-1996) (see also Been n.d. [1940]:29, on a Drake Island colony); Riggs Glacier (above the kittiwakes colony, young seen in 1996); Kashoto Glacier in Johns Hopkins Inlet (just north of the kittiwake colony); Muir Inlet shore (E. Hooge pers. comm. June 5, 1998); "scores" on an island near the head of Muir Glacier (Been n.d. [1940]:32); Triangle Island, Beardslee Island, Wolf Point, off McBride Glacier (B. Paige pers. comm. June 5, 1998); NE corner (R. Yerxa pers. comm.

June 5, 1998). A complete list of colonies reported by scientists and/or by local consultants is included in Table 7.

Mew Gull [*Larus canus*]

The Tlingit name is perhaps ***kootl'éet'aa/ kool'éit'áa***. Ehrlich, Dobkin, and Wheye (1988:172) state that three eggs (57 x 41 mm) is the normal clutch. Mew Gulls nest "in small colonies or as solitary pairs." Nests are a "scrape in highest part of habitat: river bar, dry land, or marsh.... Alternatively ... in top of low-growing spruce, on stump, piling...." Mew Gulls nest on cobble beaches, especially glacial outwash. This fits the evidence from Glacier Bay, where Mew Gulls are reported to nest at Rendu Inlet, Queen Inlet outwash, McBride Glacier (on the outwash flat), Wachusset, Tidal, and Hugh Miller inlets (M. Kralovec pers. comm. June 5, 1998); also at Queen Inlet outwash and Adams Glacier, next to a jaeger colony (M. Kralovec pers. comm. June 5, 1998). They often nest in association with Arctic Terns (M. Kralovec pers. comm. June 5, 1998).

Black-legged Kittiwake [*Rissa tridactyla*]

The Tlingit name is ***kh'éikh'w***, which apparently imitates the bird's call. Ehrlich, Dobkin, and Wheye state that two eggs (57 mm long) is the normal clutch. Black-legged Kittiwakes nest in large colonies on "island, steep coastal cliff... [of] mud-cemented onto narrow ledge" (1988:176). Nests were noted on a cliff adjacent to Margerie Glacier in Tarr Inlet (below a Glaucous-winged Gull colony); on Hugh Miller Island; and on Gloomy Knob with Pelagic Cormorants (GBNPP staff pers. comm. June 5, 1998). The southernmost colony known for the species in the eastern Pacific is at Yakobi Rock on the outer coast (Sowls et al. 1982). This is one of eight colonies noted by the survey

team (Sowls et al. 1982) in the area between Cenotaph Island in Lituya Bay and Lisianski Inlet. At these eight colonies, Sowls et al. (1982) reported a total of 2,182 nesting birds (1,091 pairs). Kessel and Gibson (1978) reported more than 200 pairs in Glacier Bay National Park and Preserve, all established since 1967. Zador and Piatt (1999:19) reported a maximum count of 261 on June 10, 1998 and of 131 nests that year on South Marble Island. They refer to Streveler (1989) and note that the colonization of South Marble Island by the kittiwakes is very recent, dating to 1989.

Arctic [*Sterna pardisaea*] and **Aleutian Tern** [*S. aleutica*]

The Tlingit name of the Arctic Tern is ***kichyaat***. According to Baicich and Harrison (1997), a normal clutch is "usually 2, sometimes 3 or 1 [40 x 29 mm]" (164-65). Ehrlich, Dobkin, and Wheye (1988:106) say that this species is "usually colonial," and that it breeds on "gravel, sand, or shell beaches, occ on grassy portions of islands and salt marshes." Sealers' Island and Reid Glacier were closed to camping because of tern nests, resulting in a resurgence of the tern population at these locations. Arctic Terns are also reported nesting at McBride Glacier spit (M. Krolavec pers. comm. June 5, 1998).

The Aleutian Tern is locally endemic. According to the American Ornithologists' Union (1998:202): "*Breeds* in Alaska from the Chukchi Sea coast … south along the western coast to the Aleutians … and Alaska Peninsula, and east along the southern coast … to Glacier Bay [*sic.*]; and in Asia on the east coast of Kamchatka and Sakhalin. *Winters* at sea, range unknown." It nests commonly south to Dry Bay (several hundred with eggs, 1977), north of the region under consideration in this report (Kessel and Gibson 1978:50-51). Kessel and Gibson (1978:50) note that the species might nest at Lituya Bay, as 12 birds were seen just offshore on May 29, 1971. In fact, nesting was

first recorded there sometime between 1979 and 1986, as it was noted in the 1986 edition of the Glacier Bay bird Checklist, but not in the 1979 edition. The 1986 Checklist lists the Aleutian Tern as "very rare" late May through early August. Ehrlich, Dobkin, and Wheye (1988:186) say that it nests, "on small offshore islands and grassy or mossy coastal flats near lagoons or river mouths.... Nests in loose colonies, oft assoc with Arctic Terns. Easily disturbed in breeding colony, readily flee nests; ... Will not re-nest if first clutch destroyed."

CHARADRII: "SHOREBIRDS"

The 1986 edition of the Checklist lists 35 species of shorebirds for the Park and Preserve. Of these, eight are known to nest there. However, of these only the Black Oystercatcher is mentioned as having been exploited by Huna Tlingit for its eggs. The other nesting species are all considerably smaller and only the oystercatcher and the diminutive Spotted Sandpiper are rated "common" during the nesting season.

HAEMATOPODIDAE

Black Oystercatcher [***Haematopus bachmani***]

The Tlingit name is ***ługún***, which means literally "fire-nose." Baicich and Harrison (1997:128-129) state that the clutch is "usually 2-3"; eggs average 56 x 39 mm. Ehrlich, Dobkin, and Wheye (1988:106) say that they nest by preference on "Rocky coast and island; occ on sand beaches, [with] nest usually above high tide line in weedy turf, beach gravel, or rock depression." As "feeding territories [are] defended year-round" according to Ehrlich, Dobkin, and Wheye (1988:106), nests of this species will be widely scattered. The Checklist indicates that they are commonly encountered throughout

Glacier Bay National Park and Preserve in appropriate habitat and that they are "common" from mid-April through mid-August. Patten counted six and eight nesting pairs in 1972 and 1973, respectively, on North Marble Island (1974:18). They were also noted at Adams Inlet, with young (GBNPP staff pers. comm. June 5, 1998; see also Been 1940). Zador and Piatt (1999:11) noted 12 pairs on South Marble Island in 1999.

ALCAE; ALCIDAE

Alcids occur throughout the northern oceans. They are strictly marine; many nest on offshore islands, often in burrows. One egg per clutch is typical of the family (Ehrlich, Dobkin, and Wheye 1988:196-214). The Pigeon Guillemot is an exception, typically laying two eggs per clutch (ibid. pg. 202). Ten species are recorded on the Checklist. Four are known to nest in the GBNPP, with two more species suspected of nesting there. These six species are described below.

Tufted Puffin [*Fratercula cirrhata*] and **Horned Puffin** [*F. corniculata*]

The Tlingit name for the Tufted Puffin is ***xhík***. Ehrlich, Dobkin, and Wheye (1988:214) state that one egg (72 mm long) is the normal clutch. They nest on "Coastal slopes, headland, rocky island with cliffs.... On turf-covered slope or on clifftop; shallow, 2'-9.5' tunnel ending in chamber. Occ lays egg on simple pile of grass and feathers. Also in rock piles, rarely under matted veg..."; three colonies were noted in area 010, from Cenotaph Island in Lituya Bay south to Lisianski Inlet, for a total of 64 nesting Tufted Puffins (32 pairs) and 22 Horned Puffins (11 pairs) (Sowls et al. 1982) (see Table 5, above). Patten (1974:18) counted 25 and 30 Tufted Puffin nesting pairs in 1972 and 1973, respectively, on North Marble Island. He counted in addition one pair of

Horned Puffins there in 1973 (but three pairs each season on South Marble Island). Sumner noted puffins nesting at the Marble Islands in 1947. Zador and Piatt (1999:12) reported up to 18 Tufted Puffins and a single Horned Puffin in the vicinity of South Marble Island in 1999. Puffins shed the colorful horny covering of their beaks each fall. Tom Mills noted that people picked up shed puffin beaks to use for rattles or on "aprons and stuff" while gathering eggs on the Marble Islands.[9]

Marbled Murrelet [*Brachyramphus marmoratus*] and **Kittlitz's Murrelet** [*B. brevirostris*]

The Tlingit name is ***ch'eet***. Baicich and Harrison (1997:171-172) state that one egg (60 x 36 mm) is the normal clutch for both murrelet species. Ehrlich, Dobkin and Wheye (1988:202-204) state that the Marbled Murrelet nests "in conifer forest near coast, inland lakes … on n[orth]-facing open ground on islands or well inland.… Also nests in rock crevices and high in trees.… Nests usually solitary." The Kittlitz's Murrelet nests "in coastal mountains, oft near glaciers … [w]ell inland, usu on n-facing slope. Oft a base of slope, also cliffs and barren ground on coasts, ledges and talus above timberline." The Checklist lists both types of murrelets as "suspected" of nesting. However, Kessel and Gibson (1978:51) state that the Marbled Murrelet is an "abundant to common probable breeder [in southeastern Alaska]."

Pigeon Guillemot *[Cepphus columba]*

The Tlingit name is ***xj'adaaxh'aan***. The Pigeon Guillemot most often lays a two-egg clutch (61 x 41 mm) (Baicich and Harrison 1997:171-172). It is considered an

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[9] *Stephani Zador (pers. comm. November 20, 2001) states Tufted Puffins shed their beaks after the breeding season, probably at sea, making it unlikely that they would be found at the nesting island.*

"abundant" nester in Glacier Bay. Guillemots "nest in small colonies," on "coastal cliff or cave, rocky island.... [placing nest] under loose rocks or boulders" (Ehrlich, Dobkin, and Wheye 1988:202-204). Patten (1974:18) estimated 50 and 60 nesting pairs of Pigeon Guillemots in 1972 and 1973, respectively, on North Marble Island. Sumner also reported them nesting there in 1947. Zador and Piatt (1999:8-9) censused guillemots on South Marble during the 1999 nesting season. They recorded a maximum of 171 individuals on May 24 and monitored 33 likely nesting sites (cf. Zador 1999).

Common Murre [*Uria aalge*]

The Tlingit name is ***kéel***. Schroeder and Kookesh (1990) state that eggs of murres were harvested by Huna Tlingit in Glacier Bay National Park and Preserve. However, it is unlikely that many of them were actually taken because the Common Murre is rated on the 1986 Checklist as "rare" in the nesting season. Patten (1974:18) tallied eight and 18 nesting pairs on North Marble in 1972 and 1973, respectively. The Sowls et al. 1982 survey reported none at the 11 outer-coastal colonies visited. Common Murres lay a single large egg (81 x 50 mm) (Baicich and Harrison 1997:169-170). They nest colonially on "coastal cliff, offshore rocky flat island.... Mostly on lower or middle cliff face, rarely in rock crevice" (Ehrlich Dobkin, and Wheye 1988:196). Zador and Piatt (1999:11) noted up to 17 Common Murres on the water adjacent to South Marble Island and up to 12 on cliffs there during the 1999 nesting season. However, nesting could not be confirmed. They also noted single Thick-billed Murres (*Uria lomvia*) on or near the island July 20 and 26, 1999 (pg. 12).

PELICANIFORMES

PHALACROCORACIDAE: CORMORANTS

These are long-necked diving birds related to pelicans. Four species occur on the Pacific coast of Alaska, though just two species are listed for the Park and Preserve (GBNPP 1986). Only the Pelagic Cormorant is known to nest there.

Pelagic Cormorant [*Phalacrocorax pelagicus*]

The Tlingit name is ***yookh***, which no doubt would be applied to the less common Double-crested Cormorant as well. Baicich and Harrison (1997:59) report that 3 to 5 eggs (59 x 37 mm) constitute a normal clutch. Ehrlic, Dobkin and Wheye (1988:28) state that Pelagic Cormorants nest on "rocky seacoasts and island cliffs.... On highest, steepest, least accessible cliffs facing water." Patten (1974:18) found three pairs on North Marble in 1972, but 30 pairs in 1973. In Glacier Bay they also are reported to nest on Gloomy Knob with kittiwakes and near Composite Island (GBNPP staff pers. comm. June 5, 1998). Sowls et al. (1982) found three colonies containing a total of 112 nesting pairs on the outer coast in the area they surveyed between Cenotaph Island in Lituya Bay and Lisianski Inlet. They are sometimes known locally as "Norwegian Turkeys" and, according to one HTEES consultant, "are good for nothing." Zador and Piatt (1999:12) counted up to 201 Pelagic Cormorants at South Marble Island during the 1999 nesting season. Two pairs constructed nests but did not attend these regularly. They noted up to three Double-crested Cormorants (*Phalacrocorax auritus*) among the Pelagics May 24 and 31.

ANATIFORMES

ANATIDAE: DUCKS, GEESE, AND SWANS

Thirty-five species of this family have been recorded in the Glacier Bay National Park and Preserve (GBNPP 1986). Of these, just 11 are known to nest locally. Three nesting species are rated "rare" or "very rare" by the Checklist. Eggs of the Common Eider ("very rare") were said by Dufresne of the Alaska Game Commission (1939) to have been taken by Tlingits in violation of the Migratory Bird Treaty Act (Catton 1995:121). If so, it must have been a rare event. Patten (1974:18) reported a single Common Eider nesting pair on North Marble Island in 1972. Of the remaining more common nesting species, one is a goose, three are dabbling ducks, two are diving ducks, and two are mergansers.

Canada Goose [*Branta canadensis*]

The Tlingit name is ***t'aawákh***, which is most likely onomatopoetic. Baicich and Harrison (1997) state that they lay "usually 5-6" eggs. There are numerous Canada Goose subspecies which vary in size. The subspecies that nests in Glacier Bay National Park and Preserve is a medium-sized, dark-breasted form, the non-migratory Vancouver Canada Goose (*B. c. fulva*). By interpolating from linear measurements published in Madge and Burn (1988:147) the authors calculate that *B. c. fulva* eggs should average 83 x 55 mm. Ehrlich, Dobkin, and Wheye (1988:58) note "nests built on flat ground in short grass near water."

Mallard [*Anas platyrhynchos*]

The Tlingit name is ***kindachooneit***, which clearly applies first of all to this species. Baicich and Harrison (1997) and Ehrlich, Dobkin and Wheye (1988:60) agree that 8 to 10 eggs (58 mm) is the normal clutch, and that nests are built on flat ground in short grass near water.

Other Duck Species

Common nesting species of the Anatidae in addition to those mentioned above include two dabbling ducks (Green-winged Teal and Northern Pintail), two diving ducks (Harlequin Duck and Barrow's Goldeneye), and two mergansers (Common and Red-breasted Merganser). (See Table 4) Ehrlich, Dobkin and Wheye (1988:64-94) describe nesting habitat preferences as follows: Green-winged Teal: "densely vegetated inland freshwater lake, marsh, pond, pool, shallow stream.... Well concealed in clump of tall grass, forbs, brush, or at base of log or shrub"; Northern Pintail: "grassland, cultivated field, tundra, sandy flat, island in boreal forest lake, marsh, pond.... Occ far from water, concealed in grass, stubble, etc."; Harlequin Duck: "rocky coastal islets, forested mountain streams with fast flowing water.... Usu under shrub 60'-90' from water"; Barrow's Goldeneye: "near densely vegetated lakes and ponds with abundant aquatic vegetation.... In live or dead tree"; Common Merganser: "lakes and rivers in mountainous and forested areas.... Usu cavity in decid tree"; Red-breasted Merganser: "rivers, ponds, lakes, coasts, usu on small islands of inland waters with low shrubby veg." The goldeneye and the Common Merganser nest most often in cavities in trees. Thus their eggs are largely inaccessible. The remaining four species hide their nests

beneath vegetation. None are colonial nesters. It seems likely that eggs of these species were not harvested in any numbers.

GALLIFORMES

PHASIANIDAE: GROUSE AND PTARMIGANS

One species of grouse and three ptarmigan species have been recorded in the Park and Preserve. All four species are year-round residents. However, the three ptarmigan species are all rated "rare," and all are restricted to the most arctic-alpine portions of the Glacier Bay National Park and Preserve (GBNPP 1986). The Blue Grouse, by contrast, is "common" and often seen in more accessible portions of the area. In any case, none of these species are colonial and locating nests with eggs would have been difficult. Blue grouse were more often hunted for their meat.

V. HUNA TLINGIT EGG-HARVESTING STRATEGIES, INCLUDING TIME, PLACE, AND MANNER OF HARVEST[10]

Egg-gathering Sites

As noted previously, the researchers identified 42 sites in traditional Huna territory where birds' eggs were harvested by the Huna people; 33 of these are within the boundaries of Glacier Bay National Park and Preserve. Thirty-two of the 42 sites were used for gathering Glaucous-winged Gull eggs; of these, 25 are within GBNPP boundaries. These sites are listed and described in Table 7, identified in Map 3, and described in further detail in Appendix 4.

All interviewees either remembered harvesting eggs on South Marble Island or, if they were too young to have participated, hearing stories about those harvests. Less than half of our consultants mentioned any other site, with Middle Pass Rock in the Inian Islands (outside the GBNPP) the next most frequently mentioned. Thus, our ethnographic description of Huna Tlingit egg-harvesting strategies emphasizes how those strategies were applied on the Marble Islands—especially South Marble Island. Access to the South Marble Island gull colony was by way of shallow gullies leading up from the gentle southern shoreline (Photograph 5). The northern shoreline has recently become a Steller's sea lion haul-out, which raises concerns about future access to the colony (Photograph 6). The eastern shore is a near vertical cliff. Of the other sites identified as Glaucous-winged Gull egg-harvesting sites, nine were mentioned by one person; six by two people; eight by three, two by four, and one by five people.

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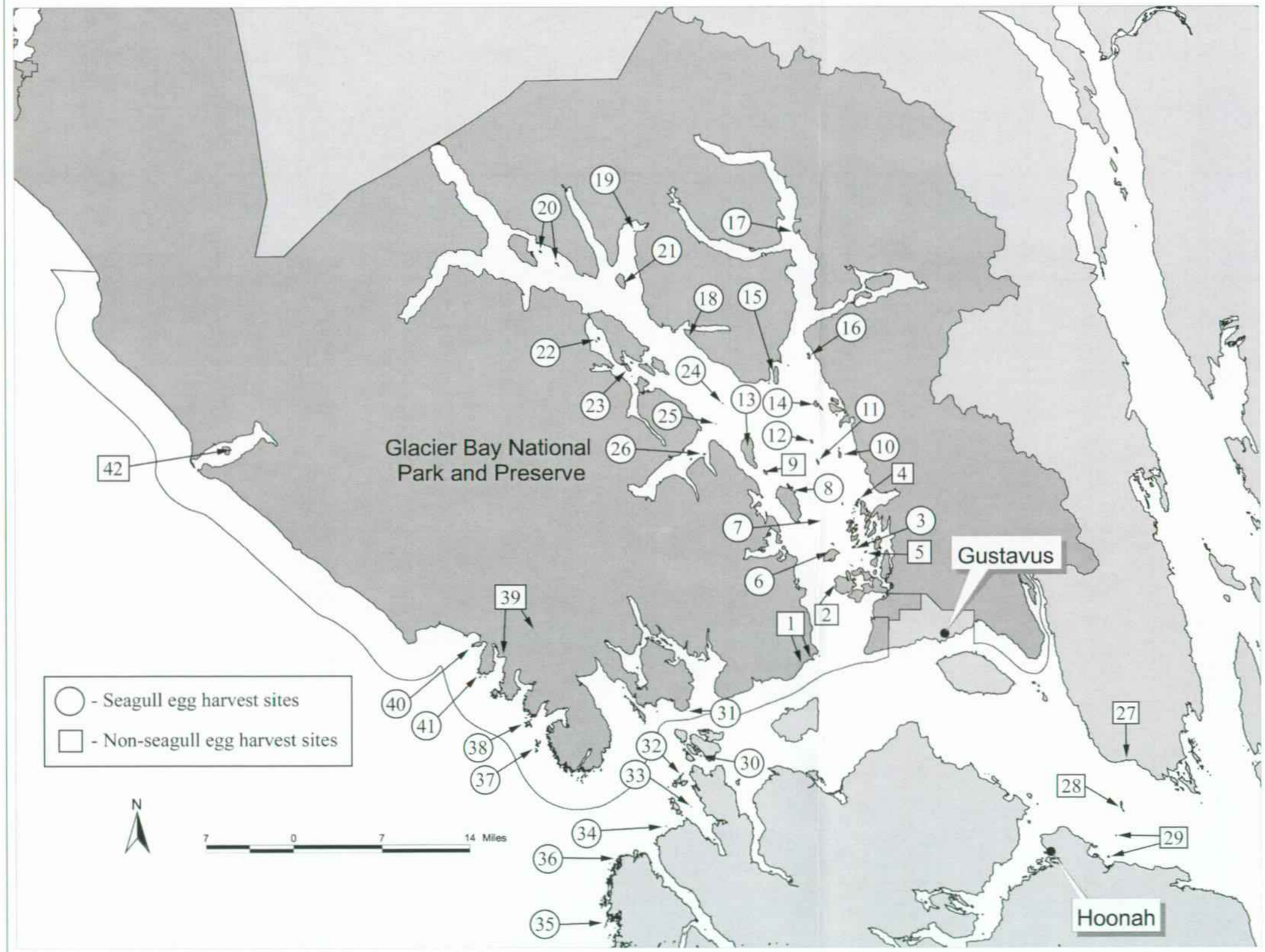
[10] *This section of the report covers Task 1, Research Questions 1- 8, 10-12, 14, and Task 3, in part. See Appendix 1.*

Photograph 5. South Marble Island - Boat Access Points, c. 2002.
Arrows on photo indicate easy boat access close to primary gull-nesting sites.

Photograph 6. Sea Lion Haul-out, South Marble Island.

MAP 3. Sites within Traditional Huna Territory Used for Egg Collecting



1		Point Carolus
2		Young Island
3		Beardslee Islands
4		Flapjack Island
5		Goose Island (= Eider Island)
6		Strawberry Island
7		Boulder Island
8		Willoughby Island (formerly)
9		Francis Island
10		Leland Island
11		South Marble Island
12		North Marble Island (formerly)
13		Drake Island
14		Sturgess Island
15		Sebree Island (at Tlingit Point)
16		Garforth Island
17		Sealers Island
18		Tidal Inlet (islands? GD)
19		Triangle Island (Queen Inlet)
20		Russell Island rocks
21		Composite Island
22		Skidmore Bay Islands
23		Hugh Miller Inlet (islands)
24		Lone Island
25		Geikie Rock
26		Shag Cove Rock (Geikie Inlet)
27		Grouse Fort
28		Sister's Island
29		Pulizzi Island (Spasski Bay)
30		Inian Islands: Middle Passage Rock
31		Greentop (local name)
32		George Islands (outside Elfin Cove)
33		Table Rock (aka "Bird Rock")
34		Pt. Lucan-Column Pt., rock between
35		Surge Bay rocks
36		Yakobi Rock
37		Graves Rocks: Egg Island
38		Libby Island, rocks inside
39		Dixon Harbor: lake
40		Boussole Arch
41		Astrolabe Pt.
42		Lituya Bay: Centotaph Island

Table 7. *Sites within Traditional Territory Huna Used for Egg Harvests.*

	Sites *	1	2	3	4	5	6	7	8	9	10	a	b	size/ kmxkm	area/ km2	map	latitude N	longitude W
1	**Point Carolus**							x			x		*			F:B1	58.23	136.025
2	**Young Island**					x		?										
3	**Beardslee Islands**	<x>	x			x	x				x					J:B6 J:C6	58.325	135.555
4	**Flapjack Island**	<x>				x		x			x							
5	**Goose Island (= Eider Island)**					x										J:C6	58.305	135.56
6	**Strawberry Island**	<x>				x		x				*	*			F:C1 J:C6	58.31	136.00
7	**Boulder Island**	<x>										*	*			?		
8	**Willoughby Island (formerly)**	<x>								x	x	*	*	3.7x1.6	4.44	F:C1	58.35	136.07
9	**Francis Island**				x									.6x.2	0.09	F:C1	58.375	136.11
10	**Leland Island**	<x>	x									*	*	.75x.25	0.14	J:C6	58.39	135.595
11	**South Marble Island**	x			x	x			x	x		*	*	.35x.2	0.05	F:C1	58.38	136.03
12	**North Marble Island (formerly)**	<x>				x						*	*	.4x.25	0.08	F:C1	58.40	136.04
13	**Drake Island**	x										*	*	3.1x1.3	3.02	F:C1	58.4	136.14
14	**Sturgess Island**	<x>	x											.6x.3	0.14	F:C1	58.43	136.03
15	**Sebree Island (at Tlingit Point)**	x										*	*	1.7x.5	0.64	F:D1	58.455	136.095
16	**Garforth Island**	x										*	*	.6x.2	0.09	F:D1	58.47	136.045
17	**Sealers Island**			x								*	*	.25x.1	0.02	F:D1	58.57	136.075
18	**Tidal Inlet (islands? GD)**																	
19	**Triangle Island (Queen Inlet)**	x										*	*			F:D3	58.575	136.32
20	**Russell Island rocks**	x										*	*			F:D3	58.55	136.45
21	**Composite Island**	x												1.6x.8	0.96	F:D2	58.53	136.34
22	**Skidmore Bay islands**	x														F:D2	58.48	136.37
23	**Hugh Miller Inlet (islands)**	x				x						*	*	.9x.3	0.20	F:D2	58.46	136.32
24	**Lone Island**	x										*	*			F:C1	58.43	136.18
25	**Geikie Rock**	x										*	*			F:C1	58.415	136.19
26	**Shag Cove rock (Geikie Inlet)**	x										*	*			F:C2	58.39	136.205
27	*Grouse Fort*										x							
28	Sister's Island								x									
29	Pulizzi Island (Spasski Bay)								x	x								
30	Inian Islands: Middle Pass Rock	x	x									*	*			F:B1 F:B2		
31	**Greentop (local name)**	x																

Table 7. *Continued*

	Sites *	1	2	3	4	5	6	7	8	9	10	a	b	size/ kmxkm	area/ km2	map	latitude N	longitude W
32	*George Islands (outside Elfin Cove)*	x	x	?														
33	Table Rock (aka "Bird Rock")	x											*			F:A2	58.1	136.25
34	Pt. Lucan-Column Pt., rock between Lisianski Inlet and Port Althorp.	x										*				F:A2	58.08	136.25
35	Surge Bay rocks	x														F:A2	58.005	136.33
36	*Yakobi Rock*	x														F:A2	58.05	136.34
37	**Graves Rocks: Egg Island**	x	x									*	*			F:A3 F:B3	58.145	136.45
38	**Libby Island, rocks inside**	x										*	*			F:B3	58.17	136.46
39	**Dixon Harbor: lake**					x	x	x								F:B3	58.22	136.52
40	**Boussole Arch**	x	x													F:B3	58.225	136.56
41	**Astrolabe Pt.**	x	x															
42	**Lituya Bay: Cenotaph Island**		x	x											0.50	F:	58.38	137.35

<x> indicates historic sites that are no longer active. 1=Glaucous-winged Gull, 2=Black-legged Kittiwake, 3=Arctic Tern, 4=Pelagic Cormorant, 5=Canada Goose, 6=Mallard, 7=Other duck species, 8=Black Oystercatcher, 9=Tufted Puffin, 10=Grouse & ptarmigan, a= Mapped in Schròeder and Kookesh (1990), b= Mentioned in project interviews. *Sites in bold are within GBNPP.

Gull Egg-gathering Site Selection

Glacier Bay and its environs have many names in Tlingit -- names with descriptive force that characterize its geomorphology (e.g., *Sit' Eeti Gheey*, or "The Bay Taking the Place of the Glacier," and *S'é Shuyee*, or "End of the Glacial Silt"), its resources (e.g., *S'ix' Tlein*, or "The Big Dish," and *Tleikhw Aaní*, or "Berry Land"), and other outstanding features. Significantly, one name applied to islands of Glacier Bay was *K'wat' Aaní*, or "Egg Land," a reference to the many bird eggs that dot this landscape each spring and a reflection of the Huna Tlingits' interest in these eggs. The Marble Islands, and especially South Marble Island, were particularly popular for their accessible, abundant and early eggs. The majority of egg-harvesting sites identified by informants for this study, like

those identified in earlier studies (Goldschmidt and Haas 1998; Schroeder and Kookesh 1990), lie within Glacier Bay National Park and Preserve (70%) and especially within Glacier Bay proper (62%). The HTEES produced a significant amount of information on why certain egging sites were preferred over others. A number of biological and cultural factors come into play in deciding where to harvest eggs. Some of the most important of these factors are discussed below.

Productivity of the site

Sites that consistently produced large quantities of eggs were preferred. Glacier Bay is recognized as having the most productive sites with the Marble Islands considered especially productive. One group estimated harvesting as many as 600 eggs from a trip to these locales around 1970, and when they left, the gulls were already beginning to re-lay (Pat Mills, HTEES interview). Many of the smaller islands, due to size, plant growth and other variables, were not as productive.

Accessibility of the site

This consideration includes proximity to Hoonah and sites of associated activities (e.g., fishing), shelter for landing and anchorage, traditional and modern land rights, regulations, and so on. A distinction is made among the Huna between those sites in exposed "outside" waters and those in protected inland waters, like Glacier Bay. South Marble Island, for example, was considered one of the closest egg-gathering sites and one of the safest for landing (Photograph 5). Its accessibility combined with its productivity made it the most popular egg-gathering site for Huna Tlingits. Informants frequently contrasted its easy access with that of sites on "the outside," such as Middle Pass Rock in

the Inian Islands, where "you get ocean swells…[that] can make it kind of difficult. You got to time it every time the ocean comes up -- waves come in then go out. You gotta time it to jump off" (Walter Smith, HTEES interview).

Regulations also affect access. South Marble Island again serves as an example, as it is currently among the most restricted landforms in GBNPP, with humans generally forbidden to come within 100 yards due to its status as a marine-mammal haul-out and bird rookery. South Marble Island is now the wildlife viewing area most visited by recreationists in GBNPP.

Photograph 7. Glaucous-winged Gull Nest with Three-egg Clutch on Cliffs, South Marble Island c. 1998

Accessibility of eggs

A site may have an abundance of eggs and even be accessible from the water, yet the eggs themselves can be dispersed, obscured by overgrowth, or beyond reach on cliffs

or precipices. Competition from other predators, including bears, mink, otters, eagles, ravens, crows, etc., is also a consideration.

Quality of eggs

Some consultants suggested that the quality of the eggs was influenced by the local habitat. For example, it is asserted by some Tlingits that gull eggs can be "polluted" by a "garbage" diet (Frank See, HTEES interview). Glacier Bay eggs, as well as other foods harvested in Glacier Bay, were often esteemed as rich and pure.

Attachment to site

Attachments to sites are built up in myriad ways -- through material, social, spiritual, and other means. As de Laguna (1972:58) points out,

> The human meanings of the landscape are more than the mythological dimension recognized by Malinowski.... They involve not simply places visited and transformed by Raven in the mythical past, but places hallowed by human ancestors. For individuals, of course, the world has special meanings, for there are places about which their grandparents and parents have told them, spots they have visited in their youth, or where they still go. None of these personal associations are completely private; all are intermeshed through anecdote or shared experiences. Not only is the world the scene of happenings long ago, yesterday, and tomorrow, but it has human significance for what it offers in food resources, scenery, easy routes for travel, or places of danger.... All of these experiential channels serve to increase local knowledge and personal sentiments toward places, which in turn influence individual choices about where and how to collect foods. Thus an egg gatherer may prefer a certain island because that is where his family always collected, where his grandfather taught him how to land the boat, where to find the nests and how many eggs to take from them, and where the family enjoyed spring picnics each year. Conversely, he may look upon unknown landscapes with trepidation or even fear.

The importance of place and attachment to place among the Tlingit in general and Huna Tlingit in particular has been explored in detail by Thornton (1995, 1997a, 1997b,

2000, 2002) and among other Native Americans by Basso (1996), Hunn (1995), and others. This literature shows the power of place in individual and collective identity and how cultural constructions of place reflect human perceptions of, interactions with, and feelings towards specific landscapes. The importance of place in sociocultural life is also emphasized within the NPS, under the rubric of cultural and ethnographic landscapes and Traditional Cultural Properties (see *Gathering sites as cultural landscapes and traditional cultural properties*, Chapter VIII of this report).

Spiritual significance of site

Reflecting strong attachment, most of the HTEES consultants emphasized that going to Glacier Bay was more than just getting food for a special treat. It was a return to the ancestral homeland. People were happy and joyous, and for many there was a spiritual component to the trip. Maureen Obert talks about her first experience in Glacier Bay:

> I felt it. I felt everything … the spirits were so strong. I was just so alive. I just felt it through my whole body. My dad was born here. My dad told me stories. I couldn't tell anyone how I felt. It was just like a big shining light.

Johanna Dybdahl speaks to the point that gathering gull eggs in Glacier Bay was more than just obtaining food.

> I think it was connection to your seasons. To …progress in your life. To continuity. To sharing in the community. To everyone coming together and you know doing this one thing.... And the difference between an egg inside Glacier Bay and an egg outside Glacier Bay is Glacier Bay is our traditional homeland. That's where our heart and soul is. That's what ties us to our land. Our food that comes out of there is directly responsible for our strength, our knowledge, our inner peace, as compared to anything that's outside of the traditional homeland is food.

Elder George Obert enlarges on Glacier Bay's spiritual significance for the Tlingit:

> Glacier Bay is [the] sacred ancestral homeland for us, the Huna Tlingit, who are a spiritual people. Every living being has a spirit including the flora and fauna. By the act of God we were pushed out of Glacier Bay due to the advancement of the glacier. And now we are not allowed to return because Glacier Bay was made a National Monument.

Frank Wright, Jr., explains why the Marble Islands and Glacier Bay are favorite places to gather eggs:

> The reason is because it's the home country of the Huna Tlingit people … spiritually and because we have a lot of stories that come out of Glacier Bay [that are] important to our people. And you know that the food that we gathered there is part of the spiritual part of the Bay. So going to Glacier Bay is more important than going out into the other areas like Inian Islands or in that area where we also get eggs.

Speaking especially about Glacier Bay's spiritual importance, elder Lily White says:

> We were taught [that] the place where we get our food was always sacred, and the food we ate, everything had spirit in it that we respected…. Everything we got from up there was sacred because when people were living up there … it was just like the Garden of Eden…. Everything they touch[ed] was beautiful. People were happy. That was the second thing to the Garden of Eden.

Referring to gathering food in Glacier Bay and Excursion Inlet, Pat Mills explains its significance in more cultural, as opposed to spiritual, terms:

> And this is how we have come to love our country the way our fathers and uncles did. We also felt that we were part of somebody and somebody special when our families took us on these trips. We were taught this is who we are and that this is how it's going to be.

Timing of Birds Egg Harvests

Because birds' eggs were among the first fruits of the year (marked by a release from "winter" confinement in the villages), and thus eagerly anticipated and craved, sites that yielded eggs early were favored. It is recognized that sites "on the inside" (i.e., in Glacier Bay) consistently yielded eggs one to two weeks earlier than those on the outer coast. The Marble Islands were said to be the earliest due to the "incubating" effects of

the heat-retaining rock (Sam Hanlon, HTEES interview). Other activities -- such as halibut fishing, salmon trolling, plant and marine invertebrate gathering, and seal and mountain goat hunting -- might also be coordinated with the timing of the eggs at particular harvest sites (see Table 7 for a list of sites).

The "moon" or month named 'Going to Get Eggs Moon' in Huna Tlingit corresponds to the period mid-May through early June. One indication that it is a good time to harvest eggs is the disappearance of gulls around Hoonah. According to George Obert,

> You'd see all the seagulls would be gone from this area [Hoonah]. And one of our uncle's boats would take off. Would take the whole family up to Glacier Bay to gather eggs….

After nesting, gulls disperse in search of food concentrations, and human settlements provide abundant offal for gulls throughout much of the year. While nesting, however, all but non-nesting subadults stay within ca. 20 km of the nesting colonies in order to attend to eggs and young. Another consultant mentioned that the quality of the gulls' voices changed as the nesting season approached. Others noted that when Indian celery (*H. lanatum)* reached a certain height at Hoonah, it was time to head for Glacier Bay to harvest eggs. This typically coincides with the onset of warmer weather shortly after the middle of May. Historically, sealing and fishing parties also returned from Glacier Bay at this time to report on the state of the nesting colonies.

Family Outings to Glacier Bay for Egg Gathering

Although gull eggs were taken at both South and North Marble Islands, as a potential egg-gathering location for families, South Marble Island was particularly

favored as a place to introduce children to this traditional activity because it provided easy landing sites and ready access to the nesting areas. It is just 80 km by boat from Hoonah and is sheltered from the strong currents and heavy swells that make access difficult and dangerous to colonies in Icy Strait/Cross Sound, (e.g., Middle Pass Rock and Table Rock in the Inian Islands) and on the outer coast, as at Surge Bay Rocks, Yakobi Rock, the Graves Rocks area/Egg Island, Libby Island, and Boussole Arch. In fact, no real alternative exists at present to the South Marble Island Glaucous-winged Gull colony as a primary site for Huna Tlingit egg harvests involving families.

A time for children and families

Sometimes people just came for the day. More often they slept overnight on the larger boats, camped on the beach at South Marble Island, or camped nearby (e.g., in the Beardslee Islands), where they also took eggs of other bird species such as geese and ducks. Parties usually ranged in size from six to twelve participants.[11]

Elder Lily White remembers these trips, saying:

> Gathering eggs in Glacier Bay was something especially the family looked forward to. It was like Easter. Family and cousins gathered up there and we collected eggs, and it was a joyous occasion….

Pat Mills explains:

> We did not go as a group of men or a bunch of people here or another bunch there. We went as family….

Participating in the event was something that even the youngest could do. Tom Mills remarks on his own experience:

> I remember carrying some of my little sisters and brothers on my back when we were going up there and doing this.

---

[11] *Confirming the extensive involvement of families in egg gathering, Trager (1939) reports; "One activity of the natives is robbing the nests of gull eggs. On these egg-taking expeditions the natives travel in gasoline launches; the whole family usually makes the trip."*

Elder Ida Kadashan relates how it felt to gather her first gull eggs while still a child:

> I sure want to find those seagull eggs. Sometimes I find one. I feel like I'm … great….

Photograph 8. Gilbert Mills Sr. and Tom Mills "Fixing Lunch", North Marble Island c. 1960. Photo courtesy of the Pat Mills family.

Harvesting Eggs While Commercial Fishing

Some egg gathering in Glacier Bay was done by halibut fishermen and salmon trollers who consumed eggs on the boats and/or took them back to Hoonah. For example George Obert says:

> …[W]e'd halibut fish in Glacier Bay. When it was time … to pick eggs, they'd pick all the eggs they could. They'd pack 'em in ice and they'd bring 'em for their families….

Wilbur Skeek, answering the question about when they harvested eggs, says:

> Skeek: Well, usually [we were] trolling and then we stopped there and [left] right after. Stopped there a couple hours.
>
> Interviewer: So you didn't have your family with you then, because you were trolling?
>
> Skeek: No

Maureen Obert remembers her father's egg gathering:

> The seagull egg was… important. I remember my dad bringing them home. And he'd talk about storing them in moss and grass on the boat…. Usually when he went up there for halibut fishing, after the halibut trip they would bring the eggs home.

Teaching Children How to Harvest Eggs and to Respect Nature

Under the supervision of older relatives including siblings, young children were allowed to harvest gull eggs. According to elder Lily White, Tlingit people considered seven as the age when children started learning their peoples' history and the traditional skills associated with living in the area. Elder Jim Austin talks about male children going out with their maternal uncles:

> As soon [as you] were big enough, you go to your uncle, and the uncle was responsible to teach and train the kids.

George Obert says:

> And one of our uncles' boats would take off … would take the whole family up to Glacier Bay to gather eggs…. [The children would be let off] on the hillsides with our uncles making sure we didn't go too far off the edge.

The danger was very real. Tom Mills recalls the death of one of his uncles.

> …[O]ne of my uncles on my dad's side, William Mills … fell off of one of the Marble Islands and had his lungs and liver all lacerated with his broken ribs, and he died in my dad's arms over in Swanson Harbor when my Dad was trying to get him to the hospital in Juneau.

As important as safety was, children learned much more. Parents, grandparents, aunts, uncles and other relatives, including older siblings, played important roles in passing traditional knowledge and values to children. An important theme involved respect for the environment and the sacred nature of Glacier Bay. Johanna Dybdahl states:

> [any time] that you harvest food or you're in the sacred homeland, you are being watched by every elder that is accompanying you.

Elder Lily White recalls:

> Dad took us up there to gather eggs, and before we went to get the eggs while we're on our way up on the boat, they would instruct us about how many eggs to take, to respect it and not try to play with it. And like I said, it was just like a spiritual food….

Photograph 9. Katherine B. Mills and Gilbert Mills Jr. North Marble Island, c. 1960. Photo courtesy of the Pat Mills family.

Although egg-gathering occasions are remembered as times when children would expend a lot of energy, most children were instructed to watch their step, to avoid breaking eggs and to walk on defined paths.[12] Karl Greenwald explains:

> You did not want to even bother or touch any place, because the gull knows more about it than you do, so you always left the nest alone. You did not disturb it. You just took the eggs and stepped around it. Children were also taught to only take what was needed or what they could use.

Tom Mills said that as children they were always taught to keep everything clean and not to leave messes for others. Elder Winnie Smith reinforces this point:

> The whole Glacier Bay was respected.. Always when you left there, you had to pick up your garbage from wherever you're at. You put that away or you burn it in the fire. You don't just leave it.

In the course of these outings and other experiences associated with the land, most children were taught the Huna perspective of the natural world. They learned that everything has a spirit. The belief that all living things have a willful and watchful spirit underlies the moral basis for respectful interactions in harvesting all natural resources. Hilda See explains:

> [E]verything … has a spirit, even a rock and a tree, so we never make fun of an animal, … especially bears.

Elder Jim Austin explains further:

> We consider a lot of things people. We talk to them [referring to the glacier, gulls, and other natural entities and confirming that each has its own spirit]. We believe there is a spirit. We [don't] know how he looked or anything. We only know he existed somewhere. Probably existed in the rock or in the mountains, in the animals in Glacier Bay or whatever. We do know he exists.

Elder Sam Hanlon remarks:

> Everything … that has life, they say, has a spirit. And when our older people back in, well let's just say back in the twenties, when they're gonna

[12] *It is likely that, where some families were strict about their children's behavior while egg-collecting, others were not.*

> fall a tree, they would look for one that they need. And they would talk to that tree to say that you have been created for our use, so we're gonna cut you down, and we're gonna use you to keep our family warm as wood.... you're talking to the spirit of the tree. When it comes to our culture of the totem pole, they would tell the tree you're gonna stand for our history, for our culture....

Individual thanksgiving rituals

Although some respondents did not remember whether their parents had explained to the gulls why they were taking the eggs and apparently had not been taught to do so themselves, many indicated that egg gatherers performed private ceremonial acts before, during, and/or after the taking of gull eggs. Some said these rituals were ongoing throughout the gathering, while others indicated that they occurred at specific times. Elders Eva Davis and Jennie Lindoff said that before they took the eggs, people asked the gulls' permission and explained that they needed to use them. They would say to the gulls:

> Give us some of the food that you have laid on this island so we can survive. So be kind to us as we're being kind to you.

Elder Adeline St. Clair recalls what her grandfather did:

> I only remember my grandfather would put the egg up like this, looking towards Heaven and thanking the birds for the food that he found.... He'd call the birds just like they were people,... and he said, "Thank you for letting me find the egg for my meal today."

Regarding respect and thanking nature, Tom Mills offers an explanation:

> Mills: [In everything we do,] like gathering eggs and the same with salmon.... We were always taught that whenever we cut the fish's head off, that we had the whole body facing up-creek so that the fish's spirit can continue going up the creek and spawn too.... [We do that] so the creek [will] continue being prosperous forever, and will keep on giving us salmon.
>
> Interviewer: And giving thanks to the gull?
>
> Mills: We always thanked everything. You always thanked all your animals.... [T]hey say [that] your Tlingit spirit can be transformed into

> just about anything after they leave the human form. So it could be your relative that you're going to catch, that you're taking food from. It could be another person's relative.... [E]verything has a spirit and has to be respected.

Johanna Dybdahl remembers:

> I always remember anytime that we participated in food gathering when I was growing up. It was always very important to the elders and to my mother [that] you know how to behave and not to ... be disrespectful ... [Y]ou didn't ever make fun of a food or be disrespectful when you were harvesting it. You were always thankful to the plants or animals that you were taking. I can remember being slapped upside the head for being disrespectful just in ... talking about getting fish or "ooh, I don't like it, it's very slimy. Yuck!"

Speaking also of the respect that the Huna have for the natural world, Glacier Bay, and the gulls, Pat Mills says:

> We have this inner feeling amongst ourselves that we're part of ... Nature, that we're part of every living thing that's here on this earth. To offend one living thing is to offend them all. I cannot just go and take their eggs and say: "Thank you. That was good." I think all of my uncles said these words, "I'm sorry if I took your life. I have no intention of inflicting disrespect upon your life.... I'm only trying to feed my family." Because of these words we've become natural conservationists.... We felt as if we were walking in one of the greatest chapels in the world....

Dan Neil explains respect, how it is shown while gathering eggs, and what it all means to him:

> Dan Neil: If we disrespect Nature, Nature is going to kick us in the ass and disrespect us. So I have respect for [all that which is Nature even a rock] like Marble Island. I give thanks to that rock for holding me up. And I give thanks to the seagulls before I leave the island. I give thanks when I come on there and see eggs. I give a Tlingit prayer and I face the four corners of the Earth which are the posts of the earth ... Nature's four corners, and give a prayer of thanks that I am going to take this portion of the eggs to nourish my body.... My parents taught me what we've been doing for thousands of years, that we walk on Earth with total respect for even the rock that holds you up. And it isn't just that.... I respect you because you are a human being. I respect everything and the possibilities are [that negative repercussions] will only be on ... individuals that [have a lack of respect]. I was born into this world with respect and I was taught respect.... I will leave it with nothing but respect, and that is what I try to pass on to my son...

If I don't pray I have a life of disrespect for myself. The creator of Earth created [a means] for us to be comfortable and for thousands of years our people have been comfortable here.... When I enter Glacier Bay I have this overwhelming feeling of home. [And I say] thank you, Lord.... This is my home. This is me....

Interviewer: So when you say your prayers, are you speaking to the spirit of the seagull; the seagull mother?

Dan Neil: I'm speaking to my grandfathers that have gone before me [saying that] I walk in all respect here and ask them to help, to protect me that I don't slip, that I don't fall and that I do not get overzealous.... [This is part] of what I am. [It is] my culture, my identity, and my past.

Besides offering prayers, some people used the first egg they found to aid them in finding more eggs. Elder Sam Hanlon explains that people in his family rubbed the first egg found on their foreheads:

> To be led where the eggs are [and then placed it on their eyes]. So you will be able to get a clear vision of where the eggs are at.

Consequences of not respecting nature

Part of the reason respect is so important to the Huna Tlingit is that lack of respect was believed to result in punishment by the spirits, which might include consequent lack of success in finding food. Mayor Albert Dick talks about this issue:

> If we respect it, we'll always have an abundance of food. And if you abuse it, the spirits will go against you and then next time you go, there won't be any.... So you always have to respect it or something bad will happen to you or a family member. You'll be punished for being abusive.... So that's what they taught us.

The Huna Tlingit also believe that the natural world may punish a disrespectful person. Elders Eva Davis and Jennie Lindoff told us:

> Something happens to them.... If you don't listen to what you're told, you either break your arm or leg or you fall off [the cliff].

Most of the Huna people were serious about appropriate behavior while gathering gull eggs. Elder Sam Hanlon said that if a child broke the rules he "just wouldn't get any eggs." Elder Frank White recalls his brother once being reprimanded by his father, grandfather and uncle for picking too many eggs with chicks. He also remarks that:

> We were also told that if people broke the rules established by the elders they might not ever be asked to go again.

Other respondents mentioned that when they picked eggs with developed embryos, which was determined by whether they floated in water (explained below), they were reprimanded and told to put them back. Still others asserted that one should not replace an egg that one had touched or the adult gulls would sense this and abandon the nest.

Gathering the eggs

Many people recalled wearing loose sweatshirts or sweaters that could be filled with 20 to 40 eggs. Others carried three- or five-gallon pails, filling one or two. People of both sexes and all ages participated in the gathering. Grass and moss were frequently collected in the nesting areas to cushion the eggs in the buckets and to protect layers of eggs. Some people mentioned using skunk cabbage leaves to line containers and to keep eggs cool. Ernestine Hanlon talks about egg containers and liners:

> We'd use the moss that was right there on the rocks. My dad would make special five-gallon … coffee cans … cut the top off and he'd make a backpack with [them]. So then he'd layer the bottom with moss and we'd put the eggs on there and put another of moss and the eggs. So we'd just have layers of moss and eggs.

In earlier times, the eggs were placed in finely woven spruce-root, grass-stem, or cedar-bark baskets which were made in a variety of shapes and sizes, including ones that served as backpacks (large woven baskets are called *taal* in Tlingit). Less frequently mentioned are small bentwood boxes with handles for transporting. Referring to baskets crafted from roots, elder Adeline St. Clair says:

> They could make big ones and have handles on there and use that to berry-pick and gather eggs. It was woven so tightly you [could] pack water in it.

Elder George Obert says:

> They had baskets, woven baskets. Some were woven out of grass, the creek grass, and the other baskets were woven out of spruce roots. They were always prepared. We even had to pack bags to be filled with the eggs, and we just packed ... pillowcases and bread bags (flour used to come in them) in the bread bags.
>
> Occasionally men used ropes or halibut lines to rappel off the edges of cliffs to

retrieve eggs that were otherwise inaccessible. Wilbur Skeek explains how this practice started:

> ... [W]e didn't start doing that until after we came out of the [U.S. military] service. We learned to jump over cliffs in the service. Utilize[d this skill] picking eggs.

Harvesting other foods while gathering eggs

Some people mentioned harvesting other foods while on gull egg-gathering trips in Glacier Bay. Elder George Obert talks about taking eggs from birds other than gulls:

> ... [T]he Beardslee Islands would be the first ones that they'd go to and take duck eggs and geese eggs and what they call oystercatcher and all those birds that land on the island.

Tony Mills recalls:

> When we went after seagull eggs, we didn't only get those. We went after king salmon, sockeye, halibut, the ribbon seaweed off Strawberry Point....

> We would get everything all at once. And all those blue mussels, something like a clam. We used to get those by the tubful.

Remembering trips to Glacier Bay as a child when eggs were taken, Elder Ester Kaze also recalls obtaining other food:

> We didn't only collect seagull eggs there. We got other food from up there at the same time.
>
> Interviewer: You got other food as well?
>
> Ester Kaze: Yeah, we got … black bear and we had seal. At the same time we picked seaweed, sea ribbon, and we got seal. So we were gone like two weeks up there.

As noted elsewhere, some parties took seals during these trips but others said they did not. For example, Alfred McKinley said seals were sometimes taken, but generally not, because they had their pups at this time. He also said that if you shoot a seal in the summer, there is a greater chance it will sink, because they are not as fat as they are toward fall.

Summary of Huna Egg-harvesting Traditions

Gull eggs were and continue to be considered a delicacy by the Huna Tlingit. They were among the first foods taken in the spring and as such brought an anticipated change in the diet in earlier times. Traditionally, egg gatherers typically showed respect to both the gulls and the eggs by explaining the reasons for their harvest, similar to the ways that respect was shown for almost all natural resources taken for personal and family use. There do not appear to have been institutionalized rituals associated specifically with egg gathering, either in Glacier Bay or elsewhere.[13] Beyond the

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[13] *Jeff Skaflestad, a local science teacher, who was also born and raised in Hoonah, but who is too young to have gathered eggs in Glacier Bay, states: "The way I've understood it to be in the stories I've heard is it wasn't a ritual type thing, it was a seasonal food gathering activity. I didn't understand it as being some special event [where people] only went there once in awhile and [took]... the eggs [needed] for some certain event.*

spiritual significance of taking and consuming Native foods in general, the importance associated with egg gathering is linked specifically to the taking of eggs in Glacier Bay because of its status as the Huna Tlingit ancestral homeland. In this regard, the act of egg gathering and consumption is a symbolic connection to ancestors who sustained their bodies in the same way with identical food from this sacred place. The social significance of family outings to gather gull eggs is of key importance in explaining the Huna Tlingit attachment to this activity. Egg gathering was one of the few food-harvesting activities that families could do together, and is very salient in the minds of people with nostalgic memories of their childhood.

Huna Tlingit Traditional Ecological Knowledge of Gull Egg Laying and Migrations

The HTEES interviews indicate that Tlingit people of several generations ago understood the basic characteristics of gull egg-laying. Elder Charles Jack explains:

> My grandfather used to tell me about seagull eggs … if you take the [seagull egg from her when she first lays the eggs] she won't miss it. She'll come back and … she'll replace it. I don't know how many eggs they can replace, but they'll replace. [My grandfather] said they've taken two and then they replace the two. But you have to get it at the right time. If you wait too long, then the ability changes … to replace another … egg.

Pat Mills also states:

> And they lay up to eight eggs. So when you take even four, [there are] still four left. So this is why my mom always said, "You take the eggs out of the nest, go back tomorrow to the same nest, and there'll be another one there."

These observations are consistent with knowledge obtained through Western Science that indicates that Glaucous-winged Gulls are "indeterminate layers" (Ehrlich, Dobkin and Wheye 1988:165, 176). An experimental study of Lesser Black-backed Gulls and Herring Gulls (both closely related to Glaucous-winged Gulls) showed that these gulls

"were capable of producing, on average, almost three times the normal clutch of three eggs." Specifically, the mean number of eggs induced was 8.59 +/- 0.61 eggs over a period of 23.5 +/- 1.9 days. One individual laid 16 eggs (Nager, Monaghan, and Houston 2000:1343). C. W. Townsend reports for the Herring Gull that, "Only one brood is raised, but when the nests are frequently robbed the birds are kept laying all summer" (Bent 1963). A gull population control experiment indicated that repeated "[r]emoval of eggs… did not cause colony abandonment during the 3 years of treatment; herring gulls continued nesting until late June or early July each year…." (Ickes, Belant, and Dolbeer 1998:272).

Glaucous-winged Gulls nest in dense colonies in which egg-laying is tightly synchronized. For example, on North Marble Island, 59% of all eggs were laid in a single week, 5-12 June 1972; 74% in a 10-day period, 20-30 May 1973 (Patten 1974:38-39). "The onset of incubation [sometime after the second egg is laid] probably causes developing follicles to atrophy… and ovulation to cease…." (Kennedy 1991:110).[14] Therefore, emphasis that consultants place on the importance of the timing of the harvest is well founded. The narrow "window of opportunity" for harvesting large numbers of fresh eggs focuses harvesting effort and thus facilitates the successful use of the strategy of harvesting eggs from incomplete nests to induce continued laying of eggs. Accurate "intelligence" about the timing of egg-laying is critical to the success of the strategies described. Hoonah residents observe the departure of wintering gulls from the village, changes in the quality of the gulls' vocalizations, and the maturation of indicator plant

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[14] *Zador (2001: 2) cites Parsons (1976) as having shown that the onset of incubation causes "complete degeneration of the fourth follicle in the closely related herring gull" (Larus aregentatus).*

species (e.g., Indian celery) to refine their timing. They also relied on fellow villagers checking the progress of nesting at the Marble Island colonies and reporting what they had observed upon their return to Hoonah.

Gull egg laying timing

Most HTEES consultants report that gulls nest about two weeks later on the outer coast than in Glacier Bay.[15] According to elder Frank See:

> I would say … about two weeks later …[Referring to Middle Pass; he continues,] we'd go picking seagull eggs first part of June in Glacier Bay. There were no eggs until about the … very last … of June. Then you'd find eggs on that island…. And while we're fishing in Inian Islands, one of us would go ashore and pick eggs in July up on … like Middle Island. And they were still fresh.

Pat Mills recalls when gull eggs were ready to pick on the outer coast:

> It came around June 15th and I remember that date. It was later. I don't know why it was later, but it was approximately two weeks later.

Gulls as migratory species

Several consultants complained that Glaucous-winged Gulls are not migratory birds, and thus that it was inappropriate to prohibit the harvest of their eggs under the provisions of the Migratory Bird Treaty Act (MBTA). (This 1918 law implemented the 1916 treaty, which prohibited the taking of nests and eggs of all migratory birds as well as those of many other non-migratory species, except for scientific purposes [Ehrlich, Dobkin and Wheye 1988:295].)[16] Christmas Bird Count totals for southeastern Alaska indicate that a substantial number of gulls (9271 total for 10 sites), well over half of

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[15] Some respondents recognized no difference in timing between Glacier Bay colonies and those on the outer coast. One consultant asserted that gulls nested earlier outside the Bay. However, not all respondents had experience with outer coastal colonies or had only limited experience. Thus, this disagreement may reflect limits to individuals' knowledge and memory.

[16] The MBTA was recently amended to allow the subsistence use of eggs, including gull eggs, in Alaska. The MBTA is discussed further in Chapter VII.

which are most likely Glaucous-winged Gulls (since most of the "other gull spp." noted are most likely this species also), winter in the region (See Table 8). Some of these may have bred farther north, while some portion of those that nested in the Glacier Bay region likely moved south in search of food. According to Verbeek (1993:2), "Many are resident, others disperse following the breeding season." "Partially migratory" would be a more accurate term.

Table 8. *Christmas Bird Counts (CBC) for Southeastern Alaska, 1997 (American Birds: Ninety-Eighth Christmas Bird Count, pp. 95-101).*

CBC	Mew Gull	Herring Gull	Thayer's Gull	Glaucous-winged Gull	other gull spp.	Totals
Chilkat	3	0	5	2		10
Craig/Klawock	cw	0	0	240	42	282
Glacier Bay	877	4	18	487	96	1482
Haines	18	61	0	76	0	155
Juneau	267	6	1	1602	15	1891
Ketchikan	42	67	112	985	289	1495
Mitkof Is.	7	0	1	774	0	782
Sitka	14	157	7	244	1637	2059
Tenakee Springs	0	16	0	0	120	136
Wrangell Island	370	1	0	557	51	979
Totals	1598	312	144	4967	2250	9271

Count week observations indicated by "cw".

Harvest and Conservation Practices

HTEES interviews exhibit recurrent themes that gull eggs should not be over-harvested, that people should take only what they need, eggs are not to be wasted, and that eggs and the gulls are to be respected. Many people also said that some elders consumed eggs with developing embryos and considered them special. However, most respondents stressed a personal preference for fresh eggs, and the strategies cited to

collect them (including timing of harvest) appear, in part, designed to increase the chances that harvested eggs will be fresh. Some basic knowledge of gull egg-laying biology is reflected in almost all gull egg-harvest strategies reported by HTEES consultants. Yet, not everyone used the same strategy in harvesting gull eggs.

Varied strategies for taking eggs from the nests

The most common strategy reported by far was to collect only from nests with up to two eggs and to take them all (41%).

> What I was taught, if there was one or two eggs in there, that was good to take, you take them. If there was three or more in there, you know, they're already starting to form so the party I was with said don't touch them.
>
> We only picked one or two eggs. If there were three eggs in the nest we were told to leave it alone because there was usually birds in there.
>
> …[W]hen you'd go up there to Marble Island, you walk around and look for [a nest], and then when you see it, you look at the eggs. Some of them have one egg. That's good. If it's got three to four eggs, you leave it alone.
>
> And we didn't pick any eggs off the nest that had already three eggs. If they had three eggs in there, then they had an embryo…. [I]f there was one egg, two eggs, you could pick them, but if there were three eggs, then we stopped.

There were two variations reported by those harvesting eggs from nests with up to two eggs. The first of these was to take only one egg from one or two egg nests (2 consultants, 5%) and the second (2 consultants, 5%) was to leave one egg from nests with 2 eggs and not take from nests with one egg.

> [We were] instructed… that we are not even to touch nests that have three eggs in it. Nests that have two, you can take one.
>
> If there was just two eggs, leave one. Even if there was one, we were told not to touch 'em.

> We always left one.... [And never took eggs from nests with three or more eggs.]

Five respondents (13%) reported taking eggs only from nests with one egg in it.

> ...[Y]ou only pick the nest that has one egg in it.
>
> And the old timers would say ... when you go picking seagull eggs, just like pick a nest what has just one egg in it. If there're two, there might be little chicks coming....

Nine respondents (23%) reported egg-harvesting strategies in which eggs were taken from nests of up to three eggs. There was considerably more variation in the details of individual approaches among this group than among those who took from nests of only one or two eggs.[17]

> So, three eggs on down that's when I pick them and out of three eggs, I'll take two eggs, but when you have four eggs there's already little ones in there, because there's one egg that's laid early and I don't know which one it is....
>
> ...we used to take two and leave one or something like that. And then [later] you start taking only one.
>
> And then, uh, they taught us that when you pick seagull eggs, you actually pick at least three in a nest. Not more than three. But when you get four in a nest, usually they're about ready to hatch, so they wouldn't let us pick eggs that had four in the nest....
>
> ...as a rule, my dad used to tell us not to pick where there's four or five, you see in the nest. Probably some has already turned into chicks. Just leave them alone.... ...so when there's, uh, three or two, one, we pick those, and he said there they're good. Just recently laid
>
> ... 4 to 5 eggs, you know, you just leave it alone.... and you never take them all either. Then the bird comes back to its nest, there's nothing there, they just leave it. But if they come back, there's one, then they'll lay one or two more.

The following quotes illustrate the idea of leaving some eggs in the nests.

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[17] *Several consultants qualified strategies involving harvesting from nests with three or more eggs by noting that if the season is late, eggs should be float-tested. This subject is discussed in more detail in upcoming pages.*

My mother used to say there's three or four eggs in there, she said, just take the three and leave one there. She said, never take all of it.

Like if they have 4 in there, we'll take 2 and leave 2. Or if they have 5 in there, maybe we'll take 2 and leave 3.

Finally, one couple reported that an older relative told them of a strategy in which all eggs in a nest were destroyed so that the gulls would return to lay fresh eggs. Nests where eggs were destroyed would then be marked. The gatherers would return to those nests to harvest the eggs.

> They'd go find the eggs if they wanted fresh eggs, and then they'd mark the nests and throw the eggs out. And the seagull would come in and lay fresh eggs.

Trager (1939:4) confirms this strategy.

> …"Two methods are used in taking the eggs. One is to rob only nests containing three or less eggs. The other method is more destructive. Upon landing on the island, all eggs present in the nests are destroyed. Then three or four days later, all nests are robbed of all eggs which they contain, thus eliminating the possibility of taking partially hatched eggs."

Such a strategy might work from an egg collecting perspective. Though Glaucous-winged Gulls raise a single brood, they may re-nest if their clutches are destroyed during the incubation period (Bent 1963; Stephani Zador pers. comm. 2001). Nonetheless, the majority of HTEES consultants described the "*proper*" strategy as one that leaves alone nests that on average are complete. Throwing out eggs to induce re-laying has been described as "wasteful" or "destructive" and is seen as such by many Huna Tlingit, who explicitly reject it. Destroying eggs and returning requires more human effort, because one must first remove the eggs (and probably also mark the nests so treated), then return several days later in hopes of finding fresh eggs. Given that

Zador (2001:31) observed that from 38% to 57% of females changed nests when three eggs were taken from nests, eggs from considerably more nests than were intended for harvest would have to be raided to reach target harvests. The authors believe that the strategy of throwing eggs out of the nest was rarely practiced. It was certainly not part of the familial egg-harvesting tradition valued by the vast majority of HTEES consultants.

Elder Eva Davis emphasized that purposely destroying all eggs to induce re-laying was not a traditional Huna practice. And, Elder Wilbur James states:

> I've never heard of Huna Tlingit people deliberately destroying all the eggs. To me it has never been a traditional method to destroy all the eggs. On the contrary, we did our best to preserve some of the eggs because our subsistence way of life depended on the seagulls laying eggs in the future.

Summary and discussion of egg-harvesting strategies

Of the 39 consultants responding, a majority (64%) reported taking eggs from nests with one or two eggs only. (Two of these respondents also reported that the proper strategy is to leave one egg behind.) Reinforcing the appropriateness of harvesting from nests of one or two eggs, two prominent Huna leaders issued the following statement to the research team:

> There are a significant number of people that know the right way to collect eggs. That is one or two from a nest. Seldom three are taken and then only if people want to eat the developing chick. There are enough able tribal members that can hand down the knowledge to the younger people.

Table 9 presents frequencies for the various egg-gathering strategies as reported by HTEES consultants.

Table 9. *Distribution of Egg-gathering Strategies Reported by Huna Tlingit Consultants.*

Strategy	**N**	**%**
Nests with 1 Egg		
Only take from nests with 1 egg	5	12.8
Nests with up to 2 Eggs		
Take all eggs from nests with 1 or 2 eggs	16a	40.9
Take 1 egg from 1 or 2 egg nests	2	5.1
Take 1 egg from nests with 2 eggs (none from 1 egg nests)	2	5.1
Nests with up to 3 Eggs		
Take all eggs from nests with up to 3 eggs	2	5.1
Take 1 egg from nests with up to 3 eggs	2b	5.1
Take all eggs from 1 or 2 egg nests, take 2 eggs from 3 egg nests	3c	7.7
Take eggs from 2 or 3 egg nests, but always leave 1 egg	1	2.6
Take 2 eggs from 3 egg nests (none from 1 or 2 egg nests)	1d	2.6
Nests with more than 3 Eggs		
Take all eggs from nests with up to 4 eggs	1	2.6
Take eggs from nests with 2 to 4 eggs, but always leave 1 egg	1	2.6
Take two eggs from nests with 4 or 5 eggs (none from 1, 2, or 3 egg nests)	1	2.6
Leave one egg	1	2.6
Throw out eggs / mark nests / return and take all eggs	1	2.6
Total with Strategy	**39**	**100.0**

a One respondent indicated that later in the season all eggs were checked to see if they floated (i.e., had a chick developing).
b Respondent indicated that eggs from nests with 2 or 3 eggs were checked to see if they floated.
c Respondent indicated that eggs from nests with 3 eggs were checked to see if they floated.
d Respondent indicated that all eggs were checked to see if they floated.

Because three eggs is the normal full clutch for Glaucous-winged Gulls (Zador 2001:24),[18] and especially early in the season, nests with one or two eggs are more likely to be incomplete and, therefore, the eggs more likely to be fresh (one egg is normally laid every two days). Given limitations on the number of follicles present at the time of the

[18] *As noted previously, Zador 2001 reports that of 291 un-manipulated Glaucous-winged Gull nests observed in 1999 and 2000 on South Marble Island, 68% had three-egg, 20% had two-egg, and 11% had one-egg clutches.*

egg harvest, if one or both of recently laid eggs is removed, the female is likely to return and to continue laying additional eggs until the clutch is complete.[19]

Harvesting from nests with up to three or more eggs was reported by 36% of HTEES consultants, and Traeger (1939) confirms Huna harvest of nests with three eggs. Empirical research indicates that four-egg clutches are extraordinarily rare, thus reports of harvesting from nests with four or more eggs may reflect distortions in information due to the passage of time (cf. Patten 1974; Reid 1987). [Zador (2001:24) reports one clutch with four eggs in a total of 291 nests in her control group in 1999 and 2000.] It can be hypothesized that if all eggs harvested were taken from three-egg nests and it was done on a wide scale, sustained harvest would be problematic, especially if practiced anytime except in the early parts of the season. The authors note, however, that all but three of the HTEES interviewees who reported harvesting from clutches of three or four eggs included a strategy of leaving one or more eggs in the nest. Conclusions about the impact of such a harvest tactic on fledging and its ultimate impacts on the gull populations are difficult to make. And, unfortunately, there are no experimental data to assist in making such judgments. Zador (2001:15) reports that the probability of gull re-nesting among predated gull egg nests increased with earlier predation dates. She also experimentally removed clutches of three eggs from nests on South Marble Island in 1999 and 2000 (Zador 2001:17-18) and observed:

> "I removed the clutch on the day the third egg was laid in 17 nests in 1999 and 24 nests in 2000.... Most (93%) gulls from these laid replacement

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[19] *Although consultants did not appear to be aware of it, the first two eggs laid in a clutch of three are 11% heavier than the third egg (Verbeek 1993:9). Thus targeting the first two eggs provides some slight gain in harvesting efficiency. One experimental study demonstrated that if the first egg is removed before the third is laid, it is the fourth egg (the final egg in such a clutch) that will be reduced in size, not the third (Reid 1987:18). Thus, it would appear that the preferred traditional Huna harvest pattern should not result in smaller and less viable eggs on average in completed clutches.*

clutches of 1 to 3 eggs (Table 2).... Pairs replaced their clutches with 3-egg clutches in 82% of the cases (Table 2). In 2000, 2 nests were depredated within 2 days of when the first and second eggs were laid, so I do not know what the final clutch size would have been if predation had not occurred. The proportion of replacement clutches that contained 3 eggs did not differ from the proportion of un-manipulated clutches that contained 3 eggs. ... This pattern remained the same when depredated nests were excluded from the analysis. Pairs with their clutches removed laid on average 2.71 (in 1999) and 2.01 (in 2000) more eggs than those in the un-manipulated group, but there was no difference in the number of eggs that hatched in either year...."

Unfortunately, her data do not allow conclusions regarding fledging, winter survival and future success in reproduction.

Leaving one or more eggs in the nest

As noted above, most consultants reporting a harvest strategy involving nests containing three or more eggs described strategies that involved leaving an egg or eggs in the nest. In total, 14 respondents (36%) described such tactics. One person described a strategy involving leaving eggs in the nests based on the time of egg collection in the nesting season.

> In the early part [of the season] you... take all of them. At a later date you start becoming selective even though it's pretty hard to tell which one is which.... ...we used to take two and leave one... And then you start taking only one.

What are the potential impacts of leaving eggs in nests from a sustainability perspective? Stephani Zador (pers. comm. November 5, 2001) was asked to discuss this matter with regard to fledging success. Her response is in the following boxed text. The researchers conclude that the effect of leaving eggs in nests is dependent upon a complex set of variables but is likely highly associated with timing.

A Discussion on the Potential Impacts of Leaving Eggs in Nests

…I did not do any experimentation beyond hatching success [in Glacier Bay], so any inferences I can make about fledging success [must be] based from the literature.

We know that in most cases the gulls will not continue to lay eggs when they have already been incubating one or more. (The process of incubation coincides with the regression of egg-production capabilities). So, if 1 egg is left, they will be able to fledge one chick at the most (assuming all other conditions are favorable). If the gulls are induced to re-lay, they may be able to incubate and fledge an entire clutch of three (assuming all other conditions are favorable). We can see in the literature that, for example, later-laid eggs are less likely to give rise to fledged chicks, but the exact probabilities for these gulls are as yet untested. Given that the gulls can fledge up to 3 chicks in a good year, if many pairs were left with only 1 egg to incubate and brood to fledging, it is logical that overall fledging success would be reduced. In fact, fledging success would be limited to 1 chick/pair, even in the best of conditions.

In Glaucous-winged Gulls, incubation starts with laying of 2nd egg (Shultz 1951, James-Veitch and Booth 1954) but full incubation not until clutch is complete (Vermeer 1963, Verbeek 1988). Once incubation begins, re-forming eggs after complete egg loss takes about 12 days (my data). As long as eggs are taken before the clutch is complete, the birds should physiologically be able to continue to lay eggs. However, some birds complete a clutch at 1 or 2 eggs. If a gull has laid 3 eggs, the clutch is (usually) complete. In the situation…[where] there were three eggs and two were taken within hours after the third was laid, the female would generally need to resume follicle growth to form the replacement egg(s). But it will not do so if meanwhile it is incubating the egg left in the nest.

Although I did not test this experimentally, I do believe that taking of a partial clutch before clutch completion/incubation would induce laying more eggs until the final clutch size is reached -- in other words, taking 1 egg from 2 in a nest where the female was preparing to lay a third. However, if the female did not have a third follicle on the way, then she would not continue to lay. In some of my nests where I removed 1 egg… 5% did not continue to re-lay. I assumed that these eggs were from what would have been 1 egg clutches, similar to the 4% of the un-manipulated clutches that were composed of 1 egg. So I would predict that some proportion of gulls that lost 1 single egg from a 2 egg clutch would not lay a third. Although much of this is physiologically constrained, there are other factors that influence when/how many eggs are laid.

Stephani Zador

Taking eggs without developed embryos: the "water test"

As noted above and particularly among people taking eggs from nests of three or more, if there were questions about whether eggs were too developed, they were tested by a "float test." If the egg sank, it was "fresh"; if it floated, it was "too far gone." Trager notes, "Some of the Indians are less destructive in collecting eggs; their practice is for each member to carry a small pail of seawater and test all eggs by placing them in this water. Those that float are replaced in the nest, and those that sink are collected" (Trager 1939:4). This practice is referred to as the "water test" by HTEES consultants.

Elder Sam Hanlon talks about how to avoid gathering eggs with developing chicks throughout the harvest season.

> And the first time that we go up there, which is the last week of May, by that time the climate is warming up so the seagulls start laying their eggs.... But anyway, they picked only a single egg in each nest. They can clean the whole island, you know. The next day, you would find more in that nest you just cleaned out... a single egg. There's still no limit. You can spend two-three days picking one egg at a time. And you can get as much as a hundred, two hundred eggs real easy. So now it comes to two and three eggs. By this time it's June. So the climate is so warm, in a day or two the eggs that has been laid two or three days ago, they already had chicks in there. So when it comes to that, our people used to carry a bucket of warm water, and they would take one egg at a time from the nest if there's two or three, and they would put it in warm water. The temperature of the warm water should be [only] warm enough so you're not cooking the eggs.... And when it floated, it's telling you one thing - that there's a chick in there. So we put it back to let it hatch. Pick another one.... *We don't want to kill the whole population of seagulls off.* (italics are authors')

Desire for eggs with or without developed embryos affects harvesting practices

In part, the individual harvest strategy adopted may have depended on whether the gatherers wanted only fresh eggs or eggs with partially developed chicks. Some respondents indicated that eggs with chicks were not considered appropriate food for

younger people. Pat Mills says that his grandmother favored eggs with partially developed chicks:

> To her, it was a treasure and she loved it … [and] there were other people… elderly people who ate eggs with the birds in them.

Elder Esther Kaze comments on the partially developed gull egg:

> I liked [them]. We ate those too…. [W]e just set them to one side and we cooked them.

Elder Charles Jack, Jr., gives the following description:

> My grandfathers, after we picked all the eggs we need, they'd go around and pick some for themselves and go listen to the seagull. And they'd say, well this one is too young. Put it back. And this one is the right age… by listening they could tell by the noise it's making. So they'd pick that and they'd eat the chicks out of the shell, but they didn't eat the whites though because it was too tough…. The chick is a whole chick [but] there was no bones … the bones hadn't formed yet.

Elder George Obert also says eggs with developed embryos were delicacies for some elders:

> …[I]t was a delicacy for some of our elders. When you showed up [with one with a developed embryo], they'd take it from you and just [Obert makes the sounds of someone eating quickly], and then give you back the white. Here, you can have this. When you're old enough you can have this one.

On the other hand, egg-gathering parties generally exerted significant effort to avoid collecting eggs with embryos. Elder Katherine Grant says:

> The old-timers liked [eggs with chicks in them] [But my mother used to tell me to] watch out for it. If there's chick in there, we don't eat it….

Elder Eva Davis gives this account:

> Davis: If you come down from the island and come down to where the sand is and you have a bucket, you put water in there. And then you can sit there and test them. If they're floating, they're no good. If they're sunk, they're OK.
>
> Interviewer: Then you put them back?

> Davis: No, they don't put it back. They put it on the grass [i.e., discarded the egg]....

Clearing brush to maintain nesting ground

Several people were asked whether the Huna ever cleared brush to enhance gull-nesting habitat. The answers were universally that they did not. Tom Mills says:

> There was no brush to clear off.... The only place we ever had to clear any brush was off in Dundas Bay when we were going to and from nagoon berry patches.

Elder Lily White responds to a question as to whether brush was ever cleared from the nesting areas:

> No, there's no brush there where they lay their eggs.

Elder Charles Jack says that he never noticed anyone doing anything to keep the area clear of brush, but remarks:

> Well, nobody's been going there. See, I think at the time when we were doing it just the people walking over the terrain a lot had a lot to do with maintaining the brush area.

Number of people or parties who could gather eggs not normatively limited

Given that they are a finite resource and the extent to which gull eggs seem to have been valued, a logical question is: Was any restriction placed on the number of people who could harvest eggs or the number of people gathering eggs at one time at any egg-gathering location? From these data, it does not appear that such limits were employed. Most of the time there was only one party at an egg-gathering site. There were times, however, when more than one party would be present. The occasion most frequently mentioned is provided in the quotations below.

> Interviewer: Did they used to try to limit the number of people that went there [referring to South Marble Island].
>
> Lily White: No. Anybody went when they wanted to. It was open then.

> Jumbo James: I think one time there was seven seine boats and the wives and the kids [at] Marble Islands.

Factors limiting Huna Tlingit gull egg gathering

If the local community did not restrict the number of people harvesting gull eggs by explicit normative regulation, how is it possible that serial Huna harvests appear to have been limited, particularly in the era of motorized access? It is likely that informal communication within the Hoonah community would have affected the time and place of gull egg harvests. If a party planning an egg-harvesting trip knew that another party had just returned from a specific location with a large number of eggs, and that the site had been visited several times previously, they would alter their harvest plans. Given the strong interest in gull eggs, information concerning the prevalence of eggs with developed embryos or the number of eggs in the nests at a particular colony would also have circulated throughout the community. Conservation aside, such information would have been used to maximize the probability of success in harvesting a good supply of fresh eggs. Because eggs were shared widely, some people with access might have decided not to go at all if they were given enough eggs to meet their needs and/or the indications were that gathering conditions were marginal.

The authors hypothesize that four other factors together, in combination with the circulation of above informal communication, functioned to limit the number of gull eggs taken during traditional Huna Tlingit egg harvests. First, Huna people were knowledgeable about key aspects of gull reproductive biology. They knew that gulls would re-lay if eggs were taken from their nests, and that there was a limit in terms of the period in which re-laying would occur and the number of times a gull might re-lay. Second, although some people ate eggs with developing chicks and considered them a

delicacy, the clear preference was for fresh eggs. Most people exerted substantial effort to maximize the proportion of fresh eggs taken. No consultant, whether they liked partially developed eggs or not, described an egg-harvesting strategy that purposely targeted partially developed eggs in quantity. Third, and related to the first hypothesis, the Huna people recognized that there was a narrow time window for easily gathering large numbers of fresh eggs, emphasizing the importance of the timing of the harvest. Fourth, egg gathering, although highly important for family interaction when done in Glacier Bay, has never been a major food-gathering activity in terms of the amount of time and energy expended in relation to the amount of food acquired.

Accordingly, the authors believe that Huna gull egg gatherers during most of this century (especially after access was motorized and non-Native foods were commonly available through the cash economy) valued egg gathering more in terms of its intangible benefits and rewards, as opposed to its necessity in relation to individual or community food supply. Given this perspective, egg gatherers would have been opportunistic in their approach to taking gull eggs in Glacier Bay, but within constraints of the larger context of other subsistence and commercial natural-resource harvests occurring simultaneously. Many families who had the equipment and finances to travel to Glacier Bay to harvest eggs may have found it infeasible in any given year because of other activities. These circumstances would have restricted the pool of people who were able to make the trip during the narrow period when conditions were optimal for gathering quantities of fresh eggs.

Given the above circumstances and conditions, the authors infer that the number of Huna people actually going to the Marble Islands for egg gathering in any given year

was usually limited. Not all families gathered eggs every year. The HTEES interviews also support the notion that, for various reasons, some families were much more involved in egg gathering than others.

Normative restrictions limiting the number of egg harvesters within the Huna Tlingit community were apparently not considered necessary nor discussed. Exceptional concentrations involving several parties at South Marble Island at once were probably due to unusual commercial-fishing circumstances, or occurred for other uncommon reasons. At the same time, the HTEES data provide no reason to believe the presence of more than one party, on South Marble Island for example, by itself would have ruined the trip for the participants. Motivations for these trips appear primarily to have been interaction among family members and friends -- within a cultural context that goes to the core of Huna Tlingit identity. As long as there were plenty of eggs to go around, another party or two might have enhanced the experience for some people. Alternatively, if the area were over-crowded, people simply would have gone elsewhere.[20]

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[20] *There is no instance in HTEES interviews where a party wanted to gather eggs but could not find a supply to harvest because they had been depleted by others.*

Analysis of Factors Known to Have Affected or Suspected of Affecting Gull Nesting Success

The impact of vegetative succession on Glaucous-winged Gull nesting sites

Patterns of vegetative succession on the heels of glacial retreat in Glacier Bay have been analyzed in detail (cf. Cooper 1923; Lawrence 1958; Reiners, Worley, and Lawrence 1971). Three broad physiognomic community types are distinguished subsequent to the emergence of bare rock or soil from beneath the retreating glacier. First is the "pioneer community" stage of low herbaceous and woody mat vegetation, which is well suited to gull nesting, other things being equal. This is followed by a "willow-alder thicket" stage that would most likely preclude gull nesting. That stage in turn is overgrown by a young Sitka spruce forest (Cooper 1923:225). According to Reiners, Worley, and Lawrence (1971:56), the mat community may develop 5-20 years after exposure of the substrate, shrub-thicket stage at 20-40 years, and the spruce forest at 75-100 years (1971:56). However, the rapidity of the transition from bare rock through these multiple stages varies a great deal depending on substrate, being most rapid on slate and argillite substrates and slowest on limestone and marble surfaces, particularly those that are steep and/or with few crevices (Cooper 1923:234).

> "The more favorable spots, such as level or depressed areas, or surfaces with many crevices, soon become covered with a luxuriant turf-like growth…by increase of the shrubby species such areas are rapidly converted into thickets in which alder and willows are dominant, while the adjacent steeper and smoother surfaces are still bare of plants. Such is the condition today upon the limestone islands of the lower bay, Drake and Willoughby. The spruces, thickly scattered upon the meadow and thicket areas, indicate the future course of development" (Cooper 1923:234).

Cooper does not mention the Marble Islands, but as their name and location suggests, they very likely are composed of the smoothest rock surfaces most resistant to weathering and invasion. Drake and Willoughby Islands (described by Cooper as "*roches moutonnées*" … "being carved of solid rock," (1923:97) supported Glaucous-winged Gull colonies to the mid-20th century, but are now too overgrown. North Marble Island has undergone the same fate somewhat more recently (i.e., since Patten's studies there in 1973-1974). It is uncertain if and/or when the South Marble Island colony will become overgrown with vegetation, though it has remained at least bare enough to allow a sizeable gull nesting colony for at least 160 years since the mantling glaciers retreated (Reiners, Worley, and Lawrence 1971:56). Now, there appear to be no alternate sites for gull colony relocation short of the cliff areas at the heads of the contemporary glaciers or on the outer coast.

The impact of Huna egg harvesting on Glaucous-winged Gull nesting success

The potential impact of traditional harvesting by Huna Tlingit people should be considered in terms of the steadily shrinking nesting base in lower Glacier Bay. Although in the strictest sense scientific evidence is lacking, ecological succession appears to be the most significant variable affecting gull nesting population trends in this area during the 20th century. Some observers have suggested that Huna Tlingit egg harvests may have been responsible for observed or imputed Glaucous-winged Gull nesting failures in the Park. The best known and most influential of these claims is that incorporated in Lowell Sumner's "Special Report to the National Park Service on the Hunting Rights of the Hoonah Natives in Glacier Bay National Monument" (1947). The

report was solicited by the National Park Service in response to pressure from the Bureau of Indian Affairs to permit seal hunting in Glacier Bay.

Catton (1995:124-128) has criticized this report as biased and inadequately documented. Regional Director Owen A. Tomlinson assigned biologist Sumner "the duty of formulating precise regulations and recommendations to cover the hunting privileges of Hoonah Tlingits in Glacier Bay National Monument." Catton states that:

> "Sumner's cursory investigation and subsequent report of August 5, 1947 reflected the NPS's strong predisposition to ban Native hunting in the Monument. Sumner's few days in Glacier Bay in late June allowed only a brief appraisal of the effects of Native hunting and egg collection on the animal populations in the Monument, much less a reliable assessment of population sizes and trends of the various species that most concerned the NPS.... His report contained a scant seven pages of text. Nevertheless, it was a strongly worded condemnation of the present policy of allowing the people of Hoonah certain privileges [in particular, egg collecting] in the Monument. Tomlinson gave Sumner's report his full support" (125).

Catton concludes:

> The report was flawed in many respects. As a biological study, it reached conclusions about animal population trends based on ludicrously inadequate field data.... Sumner made ... cavalier judgments when he inspected Glaucous-winged Gull rookeries on North Marble Island. "Great crowds of gulls stood at empty nests", he wrote afterwards, "displaying the listlessness that characteristically settles upon a bird colony a few days after it has been robbed" (126).

Sumner concluded that egg harvesting "would result in severe depletion" of the gull population if allowed to continue. He recommended to the Park Superintendent that egg harvesting be excluded from the "special privileges" of "the Hoonah natives" (Sumner 1947:10).

Sumner's recommendation was based on an inference concerning the cause of the observed nesting failure:

> [O]n June 25, 1947, the seabird nesting colony on North Marble Island was inspected by the National Park Service party. According to normal

expectation, nesting activities should have been well under way at this date, with hundreds of young gulls in evidence, or at least hundreds of nests with incubation well underway. Instead, great crowds of gulls stood at empty nests, displaying the listlessness that characteristically settles upon a bird colony a few days after it has been robbed. There were no young gulls whatever, and of nests that contained eggs, only one had the full complement of three.... It is recognized that the Hoonah natives used to raid the bird colonies of Glacier Bay during primitive times [*sic*.]. However, Hoonah has become an incorporated town with daily radio communication ... and all the home conveniences of the machine age that the mail-order houses can furnish. Use of seabird eggs by such a large community can only result in eventual severe depletion.... The Director's authorization of January 7, 1947, listing the special privileges of the Hoonah natives, does not include the gathering of seabird eggs. It is believed that in view of present and future use of Glacier Bay National Monument, this omission is completely justified (10).

Sumner's inference that the colony failure must have been due to Native harvests is highly speculative. Similar assumptions by Been in 1940 at Drake Island also lack empirical support. A similar reproductive failure of Glaucous-winged Gulls was documented in 1975 (Paige 1975) after traditional egg harvests were prohibited. Furthermore, the 1975 failure was not restricted to a single colony, but was evident throughout Glacier Bay.

However, it cannot be ruled out that Sumner's visit to the North Marble Island colony just happened to occur shortly after an extensive harvest by Huna people. If indeed "great crowds of gulls stood at empty nests..." on June 25, 1947, this would argue against a nesting failure due to a drastic crash in food supplies, as under those conditions it is unlikely many gulls would have remained at the colony (Stephani Zador pers. comm., March 21, 2001). However, given evidence that colonies will re-nest after such a disturbance following a period of ca. 12 days, it is possible that had Sumner returned to the colony two weeks hence he would have found many nests with eggs (Shugart and

Scharf 1976:473; Stephani Zador pers. comm. Nov. 20, 2001). This suggestion is supported by the following accounts describing how gulls react to human disturbance during nesting and following egg predation. In his classic life histories, Bent addresses this question with respect to two close relatives of the Glaucous-winged Gull, the Western and Herring Gulls:

> If the first set [of eggs] is removed, however, the birds will prepare a second, consisting almost invariably of two eggs, and these are deposited as likely as not in the same nest as the former set. Deposition occurs at intervals of two or three days. (Bent 1963:91, quoting Dawson [1909])

Further,

> After being robbed the birds soon begin laying again, and [Dawson] noted, by watching a certain nest, that an egg was laid every other day. (Bent 1963:91)
>
> While they are somewhat wary, many allowed us to come quite close before rising from their nests…. (Bent 1963:92, quoting Milton S. Ray [1904])
>
> Although the nest may be frequently robbed and several sets of eggs may be laid, only one brood of young is raised in a season. The normal set consists of three eggs, though two eggs often constitute a full set in the later layings…. (Bent 1963:92)
>
> When I first arrived at Great Duck the birds did not appear to mind my walking around among the nests so much as they did later on. When I entered the nesting ground the birds within 50 to 100 feet of me would rise and fly around, calling. Later on during my stay the birds within 200 to 300 feet would rise. This may have been due to the fact that young were hatching out every day. (Bent 1963:103, quoting G. Ralph Mayer [1913])
>
> Only one brood is raised, but when the nests are frequently robbed the birds are kept laying all summer. (Bent 1963:106)

Verbeek confirms the gulls' resilience in the face of human activity:

> Glaucous-winged Gulls are not easily disturbed at nest sites. In one study, in which nests on a roof were removed periodically … sixteen pairs rebuilt their nests on average 4.7 times rather than move to another site. (Verbeek 1993:12)

A study by Vermeer et al. (1991) of the effects of egging on Glaucous-winged Gull colonies in the Queen Charlotte Islands of British Columbia concluded:

> [I]f egging occurs throughout the laying and incubation periods, no gull chicks are produced [as occurred in one of the colonies studied]. In the three egged colonies where egging stopped midway during the laying period, gulls produced 0.86 fledglings per pair, whereas the average fledging rate for non-egged colonies was 0.77 chicks/pair. At the higher rate the gull population would be expected to increase at 2.7% per year.... Therefore the effects of egging, if practiced in moderation, would still alow [sic.] the population to grow.

The predominant Huna harvest strategy is consistent with the latter case, in which reproductive success was actually somewhat greater than in colonies that were not subject to egg harvesting.

The descriptions and analysis herein of the validity of Huna Tlingit traditional knowledge of gull reproductive behavior suggest that Huna Tlingit egg harvests would not have seriously disrupted gull nesting or reduced gull reproductive success over time. As Patten noted, Glaucous-winged Gulls at the major Marble Island colonies were reproducing at rates well above replacement levels in the early 1970s. Assuming that the Huna Tlingit had harvested eggs from these colonies annually for about 100 years prior to Sumner's visit, it appears that their traditional harvests did not harm the long-term reproductive success of gulls in Glacier Bay.

The impact of non-human predators

Zador (2001:13-15) reports substantial predation by Bald Eagles (*Haliaeetus leucocephalus*) at the South Marble Island colony in 1999 and 2000 although the patterns of eagle predation differed between the years. In 1999 eagle predation was observed throughout the incubation period; in 2000 depredation was much less frequent until about a month after the first gull eggs appeared. Bald Eagle populations have increased

dramatically throughout North America in the past few decades. Thus, the intensity of eagle predation at the South Marble Island colony may be a recent phenomenon.[21] In this regard Zador (2001:27) suggests that the forest on South Marble Island "appears to facilitate eagle predation by providing perches in sight of the colony areas." Non-human predation may be potentially more disruptive of gull nesting than traditional Native American harvests. The impact of eagle predation on the South Marble Island gull colony should therefore be carefully monitored so that this impact is included in assessments of the feasibility of a resumption of traditional harvests by the Huna Tlingit.

Sustainability of Marble Islands Harvests

How many gull eggs did the Huna people take before being stopped by federal intervention, and how many do they use today?

It is not possible to determine exactly how many families harvested gull eggs on the Marble Islands each year. Nor is it possible to state how many eggs they took because it has been many years since the Huna people have felt free to carry on harvests. There has been an official presence discouraging use of the park for most subsistence purposes for about 50 years. Many people remembered their last egg-gathering trip to these islands to have been in the early 1960s or before (Table 10). Thus, consultants' recollections of quantities harvested are rough approximations. Catton (1997), drawing on BIA Annual Statistical Reports for 1943 and 1945, states that in 1943, 800 dozen

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[21] *Patten (1981) states: "Bald Eagles take chicks, juveniles, and adults. However this predation is not significant at the population level." Patten says that the bald eagles between the Dangerous River and Cape Fairweather represent one of the largest concentrations in the U.S. (as of 1980).*

(9,600) gull eggs were harvested by Huna Tlingits from throughout their traditional use area.

Table 10. *Last Reported Egg Harvests.*

Date	before the 1950s	1950s	1960s	1970s	more recently	never	Total responses with relevant information
Number of consultants	5	4	7	3	1	3	23
% of total responses	22	17	31	13	4	13	100

As far as current use is concerned, people in Hoonah are understandably reluctant to talk about an activity defined as illegal by the U.S. government in a study funded by an agency responsible for enforcement of applicable laws (NPS). The researchers thus avoided asking about illegal harvesting. Consequently, current levels of consumption of gull eggs in Hoonah cannot be estimated from interviewees' direct responses. The authors believe however, that the consumption of gull eggs in Hoonah is now quite limited and has been since NPS enforcement of regulations in Glacier Bay National Park and Preserve became more active in the early to mid-1960s.[22] Comments from interviewees that support this inference include statements from some parents that they would like their children to have the opportunity to eat gull eggs, but that only occasional illegal eggs in apparent small quantities came into the community.

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[22] *Schroeder and Kookesh (1990) also observe: "Traditional harvest of bird eggs has decreased in recent years due to closure of Glacier Bay National Park and Preserve to subsistence uses and legal limitations on this harvest. Because of these legal restrictions, harvesters are reluctant to discuss possible contemporary use of bird eggs." Hoonah respondents to AFG&G surveys indicated no seabird and/or gull eggs harvested in 1985, and extremely limited harvests in 1987 and 1996.*

Estimation of gull egg harvests prior to NPS enforcement

One way of very roughly estimating Huna egg harvests prior to more active NPS enforcement and after Huna acquisition of larger and faster boats is to calculate the quantities available for harvest, given the cultural context of Huna Tlingit egg gathering -- including strategies for taking them and available technology. Such estimates are limited by the fact that the Glaucous-winged Gull nesting populations have not been systematically monitored at any site in the region, much less at all sites. Other than competition from other predators, the number of eggs that might have been harvested is a function of several factors including: 1) the number of active nests within a certain radius of Hoonah at that time (i.e., the 1950s and before); 2) the number of "surplus" eggs that a female gull might produce given what is known of gull breeding biology; and 3) the efficiency of Huna Tlingit gull egg harvests.

For the first factor the authors used Patten's rough estimate of 2,000 breeding birds (1,000 nesting pairs) for the North and South Marble Island breeding colonies in 1975 and a count of 1494 nesting birds (747 nesting pairs) tabulated at nine outer-coastal colonies by Sowls et al. for 1982. However, the authors believe that these outer-coastal colonies were likely harvested only incidentally while pursuing other resources. The colony on Middle Pass Rock in Icy Strait is likely the only colony outside of Glacier Bay that would have contributed significantly to this harvest.

For the second factor there are two estimates. Nager, Monaghan, and Houston (2000:1343) report a mean number of eggs laid per female of 8.59 based on an experimental manipulation of nesting Lesser Black-backed Gulls. Zador (2001) reports a considerably lower average of 5.75 and 5.78 eggs per female for the South Marble Island

colony in Glacier Bay for 1999 and 2000. Subtracting three eggs from these averages to allow for an eventual full clutch of three eggs, the theoretical "surplus" egg productivity can be estimated at between 2.8 and 5.6 eggs per nest, that is, the maximum number of eggs that might have been taken from each nest while leaving a full clutch that could then be incubated, hatched, and fledged. This "surplus" productivity is more than a "sustainable" harvest, because the stress of replacing lost eggs, other predation, the delays incurred in completing the nesting cycle, and other factors would reduce fledging success rates by some amount.

There is no quantitative data with which to estimate the third factor, the efficiency of Huna Tlingit egg harvests, that is, the fraction of the "surplus" eggs that might reasonably be expected the to have been harvested by the Huna each year. For the sake of illustration, the number of eggs that might have been harvested sustainably can be calculated at several levels of efficiency, e.g., 30%, 50%, and 70%. It is certain that 100% of the "surplus" eggs could not have been harvested, given that some fraction of the active nests would have been located on inaccessible terrain and the casual nature of Huna Tlingit harvests would have allowed some fraction of nests and/or eggs to escape notice. During any given visit, some nests would not yet hold eggs or would have complete clutches, and thus would have been passed over. The variation in harvest strategies reported among Huna consultants would also have tended to reduce the overall efficiency of the harvest. Finally, competition from other predators would have reduced the number available to Huna egg collectors.

On the other hand, consultants report that harvests were organized to coincide with the most productive period of the nesting cycle, taking advantage of the tightly

synchronized laying schedule in the colony. Huna people also communicated with each other with respect to the condition of the colony and the success of recent harvest efforts, which could have substantially enhanced overall harvest efficiency. Thus, it is not unreasonable to hypothesize a rather high efficiency rate for these traditional harvests. These assumptions are applied in Table 11 below.

Table 11. *Estimates of Huna Marble Islands Egg Harvests.*

X eggs/nest	"surplus"/nest *	Total "surplus"#	@ 30%	@ 50%	@ 70%
8.6†	3.6	3600	1080	1800	2520
5.8‡	2.8	2800	840	1400	1960

† Nager, Monaghan, and Houston (2000:1343).
‡Zador (2000a).
*Allowing three eggs for a completed clutch.
#On the basis of 1,000 active nests, as reported for the Marble Island colonies by Patten in 1975.

Based on the assumptions detailed above, an annual harvest by the Huna Tlingit from the Marble Islands colonies can be estimated between 840 and 2520 eggs. However, Catton (1997:107) cites a BIA count of 800 dozen gull eggs harvested by the Huna in 1943, or, 9600 eggs. If this count is accurate there must have been a substantially larger nesting gull population in lower Glacier Bay in 1943 than at present. Applying conservative assumptions, there would need to have been 11,429 active nests available for harvest, or, based on liberal assumptions, 3,810 such nests. While there is no way of knowing what the gull population was in Glacier Bay during this time, it is known that many historic nesting sites in Glacier Bay are now abandoned due to vegetational succession (see Table 7).

With the knowledge that Huna harvests in what is now Glacier Bay National Park and Preserve were not limited to the Marble Islands, although speculative, it is not unreasonable to suggest that the Huna were taking at least 2,000 gull eggs from Glacier

Bay on average annually in the period shortly before regulations on such harvests were enforced. (Using the most conservative efficiency rate from Table 11, if all other nesting sites in Glacier Bay contributed twice our estimate from the Marble Islands, about 2400 eggs could have been taken.) The rough estimate of 2000 eggs is employed in a later section to illustrate the potential cultural significance of such a harvest for the Huna community.

Were Gull Egg Harvests by the Huna Tlingit "Sustainable"?

Earlier it was noted that egg harvest strategies varied and that there are unknown implications of some of these from a sustainability perspective, if practiced frequently. The authors are convinced, however, that Huna gull egg harvests overall were "sustainable" to the extent that the South Marble colony has apparently continued to support hundreds of nesting gulls for as long as elders can recall and a multigenerational Huna tradition evolved around the harvest, sharing and consumption of these eggs, including social norms guiding harvest practices. The Marble Islands were considered very important for nesting gulls by biologists as early as 1939 (Trager 1939) and 1947 (Sumner 1947). Patten (1974) described the Marble Island colonies as "by far the largest in Glacier Bay" in 1974. As noted above, the North Marble Island colonies numbered in the neighborhood of 500 nesting pairs during Patten's study in 1972 and 1973. That site is now abandoned apparently due to successional changes in vegetation. Today South Marble Island is the primary nesting site in Glacier Bay and is a major tourist attraction by virtue of this nesting (and because of the now resident sea lions). Based on the association of recently established colonies with the tongues of retreating glaciers, it

seems likely that the Marble Islands have been important nesting sites for Glaucous-winged Gulls since first exposed by the retreating glaciers ca. 1845.

It is highly likely that Huna Tlingit have harvested eggs from these colonies since the emergence of the islands from the ice until the active exclusion of egg harvesting from Glacier Bay National Monument, a period of approximately 120 years. There is no conclusive evidence that those harvests have had lasting negative impacts on breeding success at the colony. In fact, no HTEES consultants could remember any shortages of eggs for gathering, nor could they recall any notable variations in gull populations from year to year.[23]

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[23] *The authors believe that generally Huna egg-gathering practices fit Berkes (1999:95) suggestion that a conservation ethic can develop if a "resource is important or limiting, predictable and depletable, and if it is effectively under the social control of the group in question so that the group can reap the benefits of its conservation." We explore this issue in more detail in a separate, forthcoming paper (Hunn et al. n.d.).*

VI. PATTERNS OF CONSUMPTION OF GULL EGGS BY HUNA TLINGIT, INCLUDING PREPARATION, PRESERVATION AND DISTRIBUTION[24]

As noted earlier, gathering gull eggs on the Marble Islands largely involved family outings. For some parties these outings were picnics where eggs were gathered and eaten on the spot with few taken back to Hoonah. In other cases, eggs were feasted upon in Glacier Bay but some quantity was taken back to Hoonah. People of both sexes and of all ages participated. There does not seem to have been rigid definitions of tasks by age or sex. Everyone might assist in cooking and shelling the eggs, especially while out on the land. Elder Lily White recalled, for example, that the men cracked the eggs all the way around and that the women and children removed the shell, but both sexes participated in the processing.

Eggs were frequently delivered to a central point on the South Marble Island beach where some people worked on the eggs and made a fire for boiling them for a picnic that included other food. People also cooked and ate eggs on their boats. Others remembered camping nearby but away from the Marble Islands. As explained earlier, people usually were very hungry for the eggs, and children would usually eat three and adults four or five, according to one consultant.

Transporting Gull Eggs to Hoonah and Their Distribution

Eggs harvested in Glacier Bay were frequently carried back to Hoonah where they were shared with relatives and others who were not able to make the trip. On the

[24] *This section of the report covers Task 1, Research Questions 4, 6, 9, 12 and 14. See Appendix 1.*

trip back, several temporary methods were used to keep the eggs cool and to prevent the development of the chicks. These included packing them with glacial ice that floated in Glacier Bay and wrapping them in skunk cabbage leaves, grass and moss, or other natural materials.

Sharing eggs

HTEES interview data show that most eggs that were shared were done so among kin, especially favorite elders who were fond of them. The ethic of sharing throughout the community, however, was also present. Most, but not all people, who gathered eggs, appear to have shared them.

Elder Katherine Grant answering the interviewer's questions about who they normally gave eggs to recalls:

> Relatives and all. Not just elders. You give it to anybody -- you have a friend, maybe give them four eggs. Oh, they're happy to get it....

Thus, people without close kin taking eggs in any given year probably also received some gull eggs, if they wanted them. Illustrating how food was shared traditionally throughout the community, when asked what happened when a boat returned to Hoonah with food, elder Frank See says:

> When you first come in you hit the beach. That means come down and help yourself. That's the way Hoonah was.... They all come down – some of them bring their pans. Yeah they know they're gonna get some – that is tradition.

Mayor Albert Dick remembers the following from being on a boat with a captain who distributed food to the community.

> Yeah, like our group, if he was chief, we have to donate ... so they took a little bit more to share.... Actually it turns out even though it looked like I

> didn't get very much for my hard work, it was equal to what I would eat, but everybody got a share. [Food was distributed according to family size.] Some had eight, nine kids, and they had to feed all of them for the winter. And I guess there was only a couple of us so it wouldn't be as much.

Pat Mills explains how he was taught to share eggs and other natural resources at a young age:

> So when we helped people, we were told not to ask … the reason … because these people we helped might not have any money. And they might have to dig too deep to pay you. It might hurt them too much. And so this is why when we give seagull eggs, we never ask for money. We come and say Auntie, look what we got for you. And we'd give them eggs. And if they were relations that were real important to us, we'd give them more eggs. And it's obvious that our grandmother got the most of the eggs.

HTEES consultants emphasized that elders were given priority when eggs and other food was distributed. Elder Wilbur James explains why:

> The elders are respected by the Huna Tlingit because they are regarded as teachers and because they taught and carried on the traditions of our culture.

According to Ernestine Hanlon:

> There's never been a time that our young people have let our elders go hungry. And especially from Glacier Bay. Whenever we put out the best food, it is from Glacier Bay.

Pat Mills says:

> We did have a priority for our elders because they're the ones that told us how good [the eggs] were and shared their experiences with us. And we wanted them to know that we went after eggs for them.

Frank Wright, Jr., says:

> The sharing was more with close, immediate family first, and then would go elsewhere.... Elders were always a priority.

Gull eggs were also saved for special occasions, sometimes to share with special friends.

Elder Charles Jack gives an example:

> When we first got eggs my grandpa would eat maybe one or two. He used to say, we'll save this for a special occasion. [When asked what a special day was he said:] Maybe decide today is a good day to eat an egg, you know. Yeah, [with] a special friend.

Were enough gull eggs available from Glacier Bay for widespread distribution in Hoonah?

This section examines whether there were enough gull eggs available from Glacier Bay, gathered by residents of Hoonah, to have been widely distributed on a regular basis, thereby fostering the perception of gull eggs from Glacier Bay as a delicacy throughout the Hoonah community. The following analysis takes into account previously postulated estimates of Glaucous-winged Gull populations and eggs available for harvest. It also includes the ethnographic material pertaining to the social dimensions of gull egg harvests. The data presented further supports the claims of respondents that gull eggs from Glacier Bay were widely appreciated as delicacies before open access to nesting colonies was formally denied.

One consultant estimated that a single individual would typically fill one five-gallon pail during a single visit to the colony. (There are pictures from 1959 and 1960 egg-harvesting trips in which three-gallon buckets were being completely filled with eggs.) The authors estimate that 30 chicken eggs fit into a gallon, which translates to 17.6 gull eggs per gallon, or 88.5 in a five-gallon pail. However, if allowing for the layers of grass, Indian celery or moss used to cushion the eggs, 60 gull's eggs per five-gallon pail is a reasonable estimate, if the pail is full.[25]

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[25] *NPS intercepted an illegal harvest of eggs in the summer of 1999 in which the harvester had placed 45 eggs in a well-cushioned five-gallon pail three-quarters full.*

It is clear from the interviews that not all persons in the parties actually took eggs. Elders on the trip frequently were not able to negotiate the steep terrain. There was also a division of labor, with some people boiling water and preparing eggs for eating on-site. Children were frequently accompanied by older relatives who taught them how to harvest eggs or supervised their activities. Thus, a logical conjecture is that an average party size of nine family members would have filled the equivalent of four five-gallon buckets of eggs. Based on the above calculations, this totals about 240 eggs. If that party were composed of five adults and four children (assuming that adults consumed five per meal and children three, as suggested by one interviewee), the hypothetical party of nine would have consumed about 35 eggs per meal while in the park.[26] Assuming three meals were eaten in the park, this totals 105 eggs, leaving about 135 to take back to Hoonah for use as fresh eggs, for preservation and sharing (with the unrealistic assumption that none were broken or discarded because they contained developed embryos).

Assuming that 5% of the eggs were either broken or discarded (because of not being fresh), that leaves about 128 of the 135 above to take to Hoonah. If each party was composed of two households and they each kept two-dozen eggs for their own use, there would be about 80 eggs to share with relatives and friends. If each household with which they shared received 10 to 12 eggs, then one egg-gathering trip would have resulted in eggs being consumed in total by about nine households. With each gathering household keeping only one dozen eggs and sharing about two dozen, the distribution to non-gathering households might have doubled.

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[26] *One respondent states: "...[E]verything we ate was associated with the season. It [eating seagull eggs] would be just like the bear: when the fish hit the river, the bear gorges himself with as many as he can hold the first day. I think that's the term that we use, too."*

Using the estimate of the equivalent of four five-gallon buckets filled per extended family gathering party, and assuming 2000 eggs available for harvest, Glacier Bay could have furnished eggs for a total of eight egg-gathering parties. This would represent sixteen households, who would have distributed those eggs to approximately 56 households, resulting potentially in about 72 households having gull eggs under the first of the above assumptions. During the period when eggs were being openly collected, if every recipient household did not get a dozen eggs but only enough for a portion at a meal, or perhaps enough to make a cake, and/or if gathering parties kept fewer eggs after returning to Hoonah (as suggested by one respondent) then there were clearly enough Marble Island gull eggs for them to have potentially found their way into most Hoonah households annually.[27] (Gull eggs harvested from the outer-coast colonies or other locations would have expanded considerably the number of gull eggs available to the Hoonah community during the peak gathering period when access was motorized and more colonies were accessible).

Although speculative, these figures suggest that a minority of Hoonah families would have been able to visit Glacier Bay in any given year for the purpose of taking eggs. However, if 2000 gull eggs were available for sustained harvest they easily could have been distributed widely and, therefore, widely appreciated as a delicacy in Hoonah. Our ethnographic material is consistent with this conclusion, since interviewees frequently mentioned that not all children were selected to go and that to be selected was

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[27] *One consultant, recalling a series of family egg-gathering trips, mostly to the Marble Islands in the mid-1960s, said: "I don't remember a family that was able to harvest ever keeping more than three or four, maybe a half a dozen themselves, even if they had several buckets' full. All the rest ... would get shared with the other community members, relatives, aunts, uncles, next-door neighbors.... I remember that it was always a very giving time for everybody."*

an event of great importance. The HTEES interviews also suggest that not every adult gathered eggs every year and that some families were much more involved in the actual egg gathering than others. One reason some families were able to collect eggs more often than others was that not all families owned large enough boats to make the trips with several people.[28] Finally, the interviews also indicate that prior to NPS enforcement of restrictions prohibiting their harvest, gull eggs from what is now Glacier Bay National Park and Preserve were widely distributed in the Hoonah community and recognized as special because of the location of their harvest.

Cooking and preparation

In Hoonah, especially in recent times, most eggs were cooked in boiling water and eaten on the spot.[29] The shells were sometimes put in the soil in local gardens. The most popular way of eating a boiled egg was by dipping the shelled egg in seal oil. Elder George Obert says: "We'd dip it in seal oil and turn it upside down so the seal oil runs down it and then we'd salt it." Other more modern ways of preparing gull eggs were to scramble, poach, and fry them. Some were used in baking, as gull eggs made a superior cake. Elder Hilda comments:

> Yeah, I bake cakes with them and your cake, the color is almost a bright orange. It's so pretty, and it raises up and you use only one egg where you would use two chicken eggs. They are a very rich egg.

Johanna Dybdahl describes cakes her mother used to make:

> And it was just astronomical to us because a normal size cake we all know is [from] a cake-size pan, but these cakes that they would make with the

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[28] *For example, Elder Ester Kaze says: "During my time ... the whole town didn't go up there, and it was just the people that had boats." Interviewer: "Do you think that everybody in the village got to have some eggs by the sharing?" Ester Kaze: "Yeah."*
[29] *George Dalton, Jr., said his parents sometimes made hard-boiled gull eggs in boiling coffee.*

seagull eggs were at least twice the size. It would rise that high. And so you know we used to just love it.

A few people mentioned that the eggs were occasionally eaten raw. Johanna Dybdahl says:

> I remember … a couple of elders eating the eggs raw. I mean just cracking 'em. And they ate them.

Preservation of eggs

Several consultants described traditional methods of preservation of gull eggs; some claiming that supplies of preserved eggs might last until late winter. Others said that gull eggs in their households would all be eaten by November, if not sooner. From the HTEES interviews, it does not appear that many gull eggs are preserved in Hoonah today, or in more recent times.[30] However, the detailed descriptions reported by virtually all respondents clearly suggest that egg preservation was an important and routine practice earlier in this century, before the introduction of refrigerators and freezers and at a time when gull colonies were considerably more numerous in lower Glacier Bay. In any case, whether eggs are harvested for preservation has significant implications for the number harvested. Ed Hubbard comments:

> It's like going to the store and buying a dozen eggs. You won't buy twenty dozen eggs 'cause you know … [they won't] last. The same thing holds true with going to pick eggs that we can consume today [or] in the next three days.

Several methods of preservation were described by Huna consultants. These may represent distinct family traditions. The most commonly reported practice was for hard-

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[30]*Obviously, part of the reason that eggs are not widely preserved today is because, with only two exceptions, there has been no legal access to them.*

boiled eggs to be preserved in bentwood boxes made of yellow cedar or spruce and covered in seal oil.[31] Regarding the seal oil, Lily White points out:

> It's gotta be fresh. Before when the egg season was coming close … the guys used to have this hunting trip and get the seal fat. And the ladies used to cook it, render the oil, and after it's pure and cold, they just keep it for the egg-picking time.

Elder Elizabeth Govina, who lived in Juneau at the time of the interviews, but lived in Hoonah until about 1960 recalls:

> My grandmother used to do that. She used to cook it first and peel it and then put in the seal oil…. And it'd have to be in real fresh grease. Freshly kill the seal and then render the fat. Because if you put it in… too old of seal grease, it won't be so good…

The boxes of oil-covered eggs were kept in a dark, cool place. Elder Sam Hanlon says:

> And our people back then had the bentwood cedar box. Waterproof. And when [the egg was cooked and shelled] they would pour seal oil into that box which is waterproof and place their eggs in there. And all through the winter months if you picked enough you can eat hard-boiled eggs.

Tom Mills recalls:

> Well, the eggs were preserved. The eggs were always boiled, and they were preserved in seal oil. You skinned them and then you put them in seal oil. You build a little wood spacer or something on the bottom so if there's any moisture like in all oils so the moisture will drop down to bottom of the oil barrel.

It was very important to dry the shelled eggs before storing them, as Lily White explains:

> Lay it out on something like canvas. Just keep rolling them…. Cause it will dry real fast. If you take a boiled egg out, leave, it will dry off all sides of it except where [it's] sitting.

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[31] *Although some seals were hunted in conjunction with gull-egg harvests often with the objective of rendering fresh oil, the primary seal harvest season was later in the summer. Several respondents said they did not harvest seals in the spring because that is pupping season. However, by targeting the males, overall seal reproduction would not have been affected by limited spring hunting. Frank White Sr. told us that hunters could tell the difference between males and females, primarily by their size.*

Elder Richard Dalton, Sr., says:

> They dry it by just air. First early in the morning when the damp is getting out, dry out a little bit.... And the eggs get warmed up, and it's not hot but it's warm and drying out the damp out of it. If you don't do it that way, it will mildew.

Charles Jack reports that his family preserved eggs dry in the shell:

> ...[my grandfather drained] the liquid that's in the egg. Like chicken eggs there's a liquid. You punch a hole, and it doesn't crack when you're boiling it but mostly they punch the hole and drained the water out after its cooked.... [We used] the honeycomb from the bee and wasp.... [Y]ou dip the stick in it and [then] put it in the egg to seal the hole so it doesn't breathe the air. See the idea is to get all the liquid and all the air out of the egg and then seal it and then they made it about an inch and a half above the eggs so when they stood [packed] it in those seeds [i.e., outer husks of seeds of tall grass growing on the river flats], then they covered it. It stuck up above the covering. That way they know where to put the next row, to stagger the next row in between... If they're separated so they don't touch ... they keep a long time.

A few people remembered their families preserving eggs by slicing the shelled, hard-boiled eggs very thin and drying them on rocks, but many other people had not heard of this approach.

After commercial salt was introduced, some families began preserving the boiled, unshelled eggs in a brine solution. Elder Elizabeth Govina describes how her father processed eggs using layers of salt and moss:

> He used to get moss by the trees. We'd just shake them off so there wouldn't be no insects or anything in there. We lay it out and let it dry. And he used to get those wooden boxes or orange crates... and he layers them with that moss and salt... and then we lay the eggs, salt at the bottom and on top and then the moss. Just by layers. And they keep. And you just keep them in one place. Don't move them around.... And they ... used to keep until late November ... in a cool place.

According to elder George Obert, another way of preserving eggs was to dig a hole in a stream, line the hole with moss to protect the eggs, and cover the eggs with gravel and rocks. Sometimes a dam of rocks was made to keep the eggs in place.

> …[T]hey'd dig a hole in a running stream and they'd put moss … in there, then the eggs. Then they'd put rocks around it and over it, so that they wouldn't be disturbed. As long as water was running, kept it cold…. They'd [bring] it up in the fall time when you're having a party like [the] latter part of October, first part of November.

Finally, Lila Hubbard describes a more recent way of preserving eggs, prepared in cakes, which were then preserved; she notes that this is the only way she had ever preserved them:

> The only way I [ever preserved them] was when they had my dad's party … we got some gull eggs, and I baked cakes with them. I baked the cake and froze it.

In sum, five or six distinct preservation methods were reported, suggesting that in the past larger numbers of eggs were harvested and that they played a more prominent role in the local diet and at social events than has been the case in the memory of most HTEES respondents. The fact that individuals who practice one technique may not be aware of alternative practices in use in the same community shows that a particular culture's practices may vary in detail even while serving a common, highly valued purpose.

Medicinal uses of gull eggs

Many but not all respondents reported that gull eggs were used as a healing food. Tony Mills gives the following account:

> When my mom was dying … she was hungry for some seagull eggs, so my boy Robert Mills – they couldn't go to Glacier Bay to get it, but they found some places off the islands where they got them…. They took a skiff out there and jumped off on the rocks while they were going up and down the big swells. And they jumped back on when they got their bucket or two buckets' full. And my mom was real sick. She couldn't eat anything. Couldn't stomach anything. But after we cooked the seagull eggs for her, she ate about four of them. And she felt real happy and good….

Elder Lily White also talks about medicinal use of gull eggs:

> When a person had real bad stomachaches and stuff, they couldn't eat heavy stuff like oiled meats … that they fixed for food. They used to have those eggs instead of hard stuff like bread … something they could digest…. And they had these Hudson Bay teas that's picked in the muskegs.

Elder Charles Jack explains how the elders felt about eating eggs with chicks:

> Just a few, for their medicinal uses you know and [they'd] say: well I ate a seagull…. [T]hey did a lot of things to help prolong their living. And it would also help them with medicine or whatever or maybe in their mind. It isn't a proven thing but they did [eat the eggs] because of so many things. Just like you take vitamin [C] whether you need it or not. It's the same thing.

Dan Neil recalls:

> There's a tea that you can boil it with…. Once the tea is made you just crack your egg in the tea. In fact, I had a cold one time in Glacier Bay and it was given to me for medicinal purposes.

Gull eggs and potlatches

Younger consultants usually did not recall gull eggs being given at potlatches, probably because in recent times few eggs have been preserved in Hoonah by traditional methods. Older people remembered that gull eggs were not normally given in large quantities at potlatches because they had usually been consumed. However, occasionally gull eggs were given at potlatches to honor and to thank a person of the opposite moiety for something they had done during the past year. A gull egg was a treasured gift that

represented respect and thankfulness. In addition, an elder who was given fresh eggs by a harvester might publicly thank the person at a potlatch.

Elder Frank White Sr. explains that earlier gifts of eggs might be remembered at potlatch time:

> Sometimes when you give eggs… to old-timers and then come potlatch time [T]hey'd remember it and they'd mention you and give you money. [And say] this is for appreciation for you giving me eggs from my country or from my father's country. Something like that, it's not payment for that egg, just an appreciation.

Trading of gull eggs

Although some respondents said gull eggs were not traded, others indicated that they were.[32] The most reasonable conclusion regarding this issue appears to be that some families did trade gull eggs and others did not. When they were traded, it was to people outside the village, for other products of nutritional importance. Elder George Obert:

> …people would come down with some of their dried and smoked fish. Or people from Haines and Klukwan would come down with smoked hooligan, and they'd trade for seagull eggs.

One consultant said they sold gull eggs to people who worked in Icy Strait Cannery at a time when seining started early thereby preventing cannery employees from harvesting eggs themselves.

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[32] *A limitation of our data with regard to trading of eggs may be that the question was misunderstood in some instances as only pertaining to distribution within the Hoonah community. Consultants were consistent in their answers that eggs were not traded within this community. This is not to say that the underlying basis of some sharing is in terms of the expectation that, if one gives away some commodity that they have, others will reciprocate with commodities that they have.*

Permission given to non-Huna Tlingit to gather eggs

Though non-Huna people might ask permission to gather eggs, this was unusual. When such visitors (usually relatives) came from outside Huna Tlingit territory to gather gull eggs, they asked permission, which was usually granted. They were most often accompanied by a Huna Tlingit, normally a relative, when they harvested the eggs. After citing an example of a relative from another area who came to gather gull eggs with his family, Pat Mills says:

> The reason why I mentioned Mr. Annisekett is because we go back to different people in Southeast using Glacier Bay. To me this is the connection why they used Glacier Bay, because a lot of these people are relatives.

Elder George Obert elaborates on the use of Glacier Bay for egging by non-Huna Tlingit:

> Obert: Some boats from the other communities would come in and pick somebody up or a family, bring them up to Glacier Bay.... They'd have a chance to pick seagull eggs as well. They wouldn't allow them in Glacier Bay unless they had a person or a family [from Hoonah].
>
> Interviewer: It's like asking permission
>
> Obert: Yeah.
>
> Interviewer: So where did these people come from?
>
> Obert: Angoon, Juneau and Haines and all the villages on the inside.
>
> Interviewer: Kake people too?
>
> Obert: No, they probably had their own.
>
> Interviewer: So, Angoon, Juneau, Haines, Klukwan?
>
> Obert: Yeah.

Estimates of the Nutritional Contributions of Bird Eggs to the Huna Tlingit Diet

As noted above, the cultural value of gull eggs involves much more than their nutritional contribution. As de Laguna (who worked in Yakutat) notes, they were "a treat," rather than a staple element of the diet (1972:395). Nonetheless, that contribution should be understood, given the limitations of the available data discussed earlier.

The nutritional value of a single Glaucous-winged Gull egg was estimated by extrapolating from values published for domestic chicken, duck and goose eggs. Since published nutritional values are based on a standard 100-gram sample, it was necessary to estimate the weight of a gull's egg. Nine fresh, whole, grade-AA chicken eggs were weighed to calculate their average weight. The length and width of these eggs were also measured. This was the basis for calculating a series of volumetric ratios for the various wild bird species reported to have been targeted for their eggs by the Huna Tlingit (see Table 6). The authors calculated the egg volume as $4/3\pi(l/2)(w/2)^2$ (l = length; w = width) and thus estimated that a Glaucous-winged Gull egg on average would weigh 1.7 times the average chicken egg. Since the grade-AA chicken eggs weighed an average of 59 gms, it was estimated that the average Glaucous-winged Gull's egg would weigh 100 gms. This may be compared with Patten's measurements of 142 eggs: the average weight was 97.6 gms (1974:46). Subtracting 6.7 gms from this for the inedible shell, this leaves 90.9 gms of edible portion per egg.

The authors then took the average of the available figures for chicken, duck and goose eggs as their nutritional standard (Watt and Merrill 1963). For minimal daily requirements for humans, the averages of the values recommended by the National Academy of Sciences (1974) for males and females ages 23 to 50 were used. These are: 2,350 Kcal, 51 gms protein, 4,500 IU Vitamin A, 800 mg Calcium (Ca) [*400 is an international standard], 800 mg Phosphorus (P), 14 mg Iron (Fe), 1.2 mg Thiamin (Thi), 1.4 mg Riboflavin (Rib), 1.6 mg Niacin (Nia) (see Table 12).

Table 12. *An Estimate of the Nutritional Value of Various Eggs per 100 grams (3.5 ounces).*

	Water	Kcal	Protein	Fat	Ca	P	Fe	Thi	Rib	Nia	VitA
Chicken	73.7	163	12.9	11.5	54	205	2.3	0.11	0.30	0.10	1180
Duck	70.4	191	13.3	14.5	56	195	2.8	0.18		0.10	1230
Goose	70.4	185	13.9	13.3	-	-	-	-			-
Gull	71.5	162	12.1	11.8	50	180	2.34	0.14	0.27	0.09	1085
RDDA %	-	7%	24%	-	6/12%	22.5%	17%	12%	19%	5.6%	24%
#Gull eggs/ day*		14.5	4.2		8/16	4.4	6	8.6	5.2	17.8	4.1

Ca = calcium, P = phosphorous, Fe = iron, Thi = thiamine, Rib = riboflavin, Nia = niacin, * to meet RDDA

However, on an annual basis it is clear that gull eggs could have provided only a tiny fraction of the total Huna Tlingit food energy requirement. If a maximum of 9600 gull eggs (the BIA figure for 1943) were actually available per year for a Huna Tlingit population in the neighborhood of 600, the egg harvest would have provided approximately 0.3% of the community's total annual food energy requirements.

VII. THE IMPACT OF REGULATION OF BIRDS' EGGS HARVESTS ON THE HUNA TLINGIT[33]

At the beginning of the 20th century, it was obvious that many migratory North American bird populations were in serious decline and widespread interest in their conservation began. According to Wagner & Thompson (1993):

> The loss of opportunities to hunt waterfowl was of concern to the organized sport hunting fraternity. Concerns were also raised over the potential effects on agriculture as insectivorous bird populations declined.

Migratory routes had been identified in the 1890s (by banding) and it was clear that effective regulation of bird harvest would have to be done on an international basis.

Migratory Bird Treaty Act

In 1914, the U.S. presented a draft treaty to the Canadian government. After being signed by American and British representatives in 1916, the Migratory Birds Convention Act was passed by Parliament in 1917. Subsequently, the U.S. Congress passed the Migratory Bird Treaty Act (MBTA) in 1918. Eventually, Mexico signed a similar treaty in 1936 and conventions were also signed with Japan (1972) and Russia (1976). The MBTA is the domestic law that implements U.S. commitment to the international conventions.

Birds are classified in the MBTA as: migratory game, migratory non-game, and migratory insectivorous birds. The act governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. Wagner

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[33] *This section of the report pertains to Task 1, Research Questions 15 and 16 in part. See Appendix 1. For a more complete discussion of the relationship between the Huna Tlingit and the NPS, see Catton 1995, especially chapters VI and X.*

and Thompson (1993) state:

> Hunting of non-game and insectivorous birds was prohibited. A closed season on hunting of game birds was established from March 10 to September 1, with a maximum length of a hunting season at any location set at three and one-half months… Sale of any birds, eggs and nests was prohibited.

Although there are limited exceptions for subsistence uses, until recently the MBTA generally outlawed the taking of migratory birds and their eggs during the spring and summer, including customary and traditional harvests in areas where people were dependent upon them. Paradoxically, customary and traditional harvests by indigenous people are guaranteed by the Canadian constitution, and both are acknowledged and protected by U.S. policy. Since the mid-1980s, the U.S. Fish and Wildlife Service has used "discretion" in enforcing laws establishing closed seasons that impact customary and traditional harvests, provided that such harvests did not adversely affect species' populations and birds were not wasted (Tollefson 1999). Not surprisingly, traditional harvest by Northern indigenous groups in the spring and summer continued throughout the tenure of MBTA -- especially in rural and remote areas.

Negotiations to change the MBTA began in the 1970s but conventions were not signed until December of 1995. The Senate gave its consent to the protocol for amendment in October of 1997. On October 7, 1999 the U.S. Fish and Wildlife Service announced that the U.S. and Canada had formally agreed to a protocol amending the 1916 Migratory Bird Treaty Act. This agreement allows both countries to recognize and cooperatively manage subsistence uses of migratory birds and their eggs for "their own nutritional and other essential needs," including such harvests in the spring and summer. Given that these harvests have been ongoing, the 1999 MBTA amendments function

mainly to legitimize them. They also implicitly acknowledge that such activities are not inherently ecologically unsound.

The protocol establishes eligibility for the "indigenous inhabitants of Alaska" in specified areas. Tollefson states:

> Indigenous inhabitants are defined as permanent residents of a village within a subsistence harvest area, regardless of race. Subsistence harvest areas are established to include most village areas within the Alaska Peninsula, Kodiak Archipelago, the Aleutian Islands, and areas north and west of the Alaska Range. Areas that would generally not qualify include the Anchorage, Matanuska-Susitna and Fairbanks North Star Boroughs, the Kenai Peninsula roaded area, the Gulf of Alaska roaded area, and Southeast Alaska. Exceptions to these areas can be made through a deliberative process [that] includes the management bodies established by the Service.

NPS Management and the Huna Tlingit, 1925 to 1974

An exact description of NPS management and their interaction with the Huna Tlingit during this timeframe is difficult, if not impossible, to construct. The written record is sketchy, memories dim over time, and information passed down verbally over several generations may lose its accuracy. Catton (1995:29-31) questions whether the Tlingit people understood in 1925 the impact the designation of Glacier Bay as a national monument might have. The founding of the Tongass National Forest on their lands in 1907 had little or no effect on their traditional harvest practices. Catton surmises that they may have expected that the National Park Service would have no further impact. Catton also notes that, in contrast to most National Park Service lands in the lower 48 states, Indian title in Alaska had not been extinguished and the issue of Indian land claims was ignored when Glacier Bay National Monument was established. He characterizes the NPS de facto management of the new national monument as "virtual non-management… through the 1930s" (1995:4). "NPS officials had no direct contact

with the people of Hoonah before 1939." (Catton 1995:13) The fundamental reason for this lack of contact was simply because the NPS had no personnel stationed in the area.

The Monument was expanded in 1939 primarily to protect the Alaskan brown bear[34] incorporating the Marble Islands. Catton reports that "Hoonah Tlingits… resisted the new regime; [and] negotiated for special privileges to continue seal hunting…." As noted previously, these harvest privileges (including those pertaining to gull egg harvests) became an issue in the 1940s (Sumner 1947). However, very few tourists visited the park until the mid-1960s, and enforcement of restrictions on Tlingit harvests in the park were unsystematic (Catton 1995:3). Rangers were stationed at Glacier Bay National Monument in about 1950. Eventually NPS management "ended seal hunting [privileges] by Natives [1974], promulgated regulations on vessel traffic to protect the endangered humpback whales [1993], and began to phase out commercial fishing in park waters [1998]" (Catton 1995:4).

Catton reports several instances of conflict, sometimes violent, between white settlers and Huna people within and around the Monument during the 1940s:

> It seems unlikely that any arrests of Tlingits were made by NPS officials in these years [the 1940s], for certainly any such incidents would have been reported by Been or the custodian at Sitka, Ben C. Miller. Rather, it was white residents in the area who took the extension of the monument in 1939 as their cue to wreck Tlingit property and drive the Natives away with gunshots. The Tlingits invariably associated these actions with the Park Service. For example, two old Natives lived on Drake Island in Glacier Bay where the Dakdentan clan had a fort and palisade. A resident fox farmer ran the old couple off the island and tore down these structures. When the Tlingits protested, he told them the government had given him permission.

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[34] *Several Hoonah people say a meeting took place between the NPS and residents of Hoonah prior to the expansion of the monument in 1939 at which time they were told that they could continue to hunt, fish, and gather in the park. However, there is no record of such a meeting in NPS records.*

The U.S. Fish and Wildlife Service "made 'three or four' arrests of Huna Tlingits for 'hunting and trapping in the Glacier Bay area' during the winter of 1945 to 1946, which left many Huna Tlingits confused as to what they could or could not do in the Monument." (Catton 1995:121) In 1946, responding to Tlingit complaints, the Bureau of Indian Affairs superintendent, Don C. Foster, requested a clarification from the National Park Service as to Tlingit rights giving rise to the Lowell Sumner investigation.

According to Catton (1995), by the 1960s the legal basis for the Huna hunting privileges was "becoming obscure to the people who staffed the Monument." In fact, the existing agreement had been drafted by the superintendent and the BIA in 1954. This agreement allowed the Huna to gather berries, hunt seals, and carry weapons ashore for protection against bear attacks. The authorization allowing these activities was renewed in 1956, 1958, 1960 and 1962 with few modifications. The NPS began to take specific steps to rescind the agreement in 1964.[35] Eventually NPS management "ended seal hunting by Natives [1974], promulgated regulations on vessel traffic to protect the endangered humpback whales [1993], and began to phase out commercial fishing in park waters [1998]" (Catton 1995:4).

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[35] According to Catton (1995) the primary objection to Native seal hunting by the NPS was the threat that such hunting represented to the Monument seal population. NPS rangers had negatively reacted to a seal- hunting camp in 1963 in the monument in which ca. 243 seals had been killed and the remains of carcasses left to rot on a two-mile stretch of beach. In 1965 one estimate placed the number of seals killed by Huna hunters in the monument at about 1,200 during the first half of the year. Nonetheless, a NPS staff report in 1966 said that present hunting pressure was not "sufficiently intense to cause a noticeable change in the seal population" ("Seal Hunting—Glacier Bay, [1966]," GLBA, administrative files, file N1619 as quoted by Catton 1995). In 1966 a tourist concession opened in the Monument, introducing NPS management also to the negative reactions of tourists who were not happy with the fact that the animals were being killed in an NPS-managed area. There was also the issue that both the tourists and NPS management wanted seals that could be easily viewed at close range from tour boats. NPS management also argued that the special seal-hunting privileges were not related to subsistence but a pretext to enter a protected area to harvest hides for commercial operations killing large numbers on a single trip. Finally, seal hunting, and in particular bounty hunting, was perceived as wholly inconsistent with the NPS mission.

Huna Gull Egg Harvesting and Federal Enforcement of Harvesting Prohibitions

The history of Huna gull egg-harvesting privileges and the federal enforcement of egg-gathering prohibitions within Glacier Bay are far from clear. In a December 1939 letter to Frank Been, NPS Director Cammerer states: "It is our intention to permit the Indians to take hair seals and to collect gull eggs and berries as they have done in the past, until a definite wildlife policy can be determined." (Norris 2002:39) The authors note that in 1947 Lowell Sumner recommended an end to gull egg gathering in Glacier Bay as a "special privilege." This language implies that Sumner believed the Huna people had the same type of privilege to collect gull eggs that they had for seal hunting and other food-harvesting activities. He also apparently believed this privilege was recognized by his intended readers. However, the NPS agreement with BIA in December 1946 that sets forth Huna privileges in Glacier Bay does not mention egg collecting. It does refer to berry picking and is primarily about seal hunting.

According to Wayne Howell (pers. comm. August 20, 1999), a long-time employee of the park (now retired) says that Superintendent Henry Schmidt advised Huna people in 1953 or 1954 that egging was illegal and to stop. (There is, however, no formal record of Schmidt doing this and the retired employee declines to be taped.) In addition, according to Howell, a park ranger stationed at Glacier Bay from 1953 to 1955 says he recalls seeing people on South Marble Island but did nothing to stop them because there were many poaching violations and he did not regard this as a serious issue. NPS ranger reports of the 1960s contain no record of citations or contacts associated with egg harvesting. Superintendent Howe, according to Howell, says that when he transferred to the Monument in 1966 he had no knowledge of egg harvesting

and was unaware that it was an issue. With regard to the timing of more intensive enforcement to prevent gull egg gathering, Howell says: "The best we [GBNPP] can say is that people were informed not to egg in 1953 or 1954 and enforcement must have occurred sometime after that, so that by 1966 it [egg gathering] was not occurring overtly (although we know that people continued to collect when they could be sure nobody was watching)."

Belief that NPS or Coast Guard Destroyed Gull Eggs

Although respondents were not systematically asked about this subject specifically, a few respondents stated that either the NPS or the Coast Guard destroyed gull eggs or harassed gulls in Glacier Bay. One elder said there were fewer gulls since NPS presence in Glacier Bay and went on to say:

> Respondent: A lot of people witnessed them bustin the eggs on the nest.... Yeah busted the eggs. ...this was way back in the 1940s or 1950s.
>
> Interviewer: Why did they do that?
>
> Respondent: Nobody knows. Getting too many seagulls I guess.

Another elder says:

> The Park Service has destroyed gull eggs.

Yet another elder told us:

> I've heard lately there's some Coast Guard that came in there and destroyed whatever eggs there was. I don't know what reason. Probably because there were too many seagulls. Our people utilizing the eggs kept the population down and kept it in balance.

A variant of the belief that the NPS destroyed gull eggs is that they hired someone to do it as indicated in the following statement:

> Respondent: ...the Park Service [did] hire someone to destroy the eggs wantonly, but not feed the people.... So, the management [of the park] they gave more protection to the seagull eggs than they did to us. And then they destroyed it, telling us that it was necessary to do so.

Interviewer: Did they give you a reason.... [w]hy they destroyed the seagull eggs?

Respondent: No. The government does not need a reason. They never needed it before. Why should they need it now?

Finally, one respondent commented:

Respondent: ...so that is why when it comes time to bust the eggs, you got to make sure there's four in the nest before you break the eggs because then she won't replace it, but if you break [eggs out of a nest] of three they'll lay four or five eggs

Interviewer: But don't you want them to replace [the eggs].

Respondent: I'm talking about the Fish and Game who wants to cut back on [them].... If they don't do it the right way, there [will] always be a lot of seagulls. They'll never kill them off. They have to do it at the right time if you want to control the population.

Not all respondents were familiar with the story that a public agency had destroyed gull eggs or harassed gulls. One respondent asked about the story of the Coast Guard or NPS destroying gull eggs, said he had not heard anything about it. Another elder with memories of gull egg collecting back to the 1920s was asked about the government breaking eggs directly and he said that he had heard nothing of it.

There is insufficient data to explore the origins of stories that NPS or some government agency has destroyed gulls' eggs in Glacier Bay. It is apparent, however, that such beliefs reinforce the negative attitudes toward the federal government and the NPS that are held by several residents of Hoonah.

Reactions by Consultants of the HTEES to the Prohibition of Harvesting Certain Food Resources from Glacier Bay - with Emphasis on Gull Eggs[36]

Readers should realize that gull egg collecting is seen by most Huna as integral to the larger issue of being displaced from Glacier Bay, depriving them of a much broader range of subsistence uses and occupancy. However, because the objectives of this project are focused on egg collecting, this discussion focuses on that subject.

Our consultants were universally critical of laws and regulations that exclude them from Glacier Bay National Park and Preserve for the purposes of taking important traditional foods, including gull eggs.[37] This does not mean that people said they are presently materially impacted by the closure of the park to egg gathering. Gull eggs were widely considered a delicacy, and today Glacier Bay is the only close place with safe access where quantities of gull eggs can be taken by extended families. The importance of the loss of legal access to GBNPP for egg collecting is tied to the spiritual importance of Glacier Bay as the Huna ancestral homeland, the spiritual nature of food, its relationship to personal and group identity, and the salience of nostalgic memories held by people who gathered eggs as children.

In attempting to understand Huna reactions to federal restrictions on egg gathering in GBNPP, readers should recall that the Huna Tlingit see themselves as a part of the natural ecological system -- not separate from it as is characteristic of Judeo-

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[36] This section of the report is written from a Huna Tlingit perspective as is inherent in the mandate and methods associated with this research. Our consultants have made many heartfelt and emotional statements that warrant serious consideration. We also emphasize that we have no intent to malign individual members of the National Park Service or to categorically convey disrespect for the NPS organization.

[37] We emphatically do not mean to suggest that the negative impacts Huna people perceive from exclusion from Glacier Bay for food harvesting purposes are singularly centered around the specific issue of egg gathering. Egg gathering is part of a suite of issues that include all Native foods traditionally taken in Glacier Bay.

Christian philosophy and much contemporary secular wilderness advocacy. They see themselves as the historical caretakers of this pristine natural area that was impressive enough to outsiders to be deemed one of the preeminent wilderness parks in the U.S. Most Huna see it as extremely paradoxical that they are now prohibited from traditional subsistence activities and that their culture is not acknowledged as part of the natural ecosystem by current park management philosophy and policy.

Consultants' reactions to questions concerning the impact of NPS restrictions on access to Glacier Bay harvests are placed in categories below. Quotations illustrating various perspectives are listed within each category. The nature of these quotations was not common to all of the interviewees, nor do they represent all possible statements that could have been included in each category. Rather, the quotes were selected to illustrate how people felt about the issues at hand. In total, the categories represent the range of opinions expressed by HTEES interviewees. In some cases, quotations may have implications for multiple categories of reactions. In other words, the categories of reactions and many of the quotes regarding NPS restriction of access are not necessarily mutually exclusive.

The following headings are an attempt to categorize and to paraphrase the essence of Huna perspectives on the issues addressed in this report. These perceptions may be unsettling to some readers; other observers may even question the existence of these views. Nonetheless, the authors believe that the Huna claims are genuine, even if they may appear to some people to be exaggerated.[38]

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[38] *Pat Mills says: ...[S]ometimes our anger gets the better of us and we're kind of harsh with our words to people because we're defensive about how things were done. We mean no disrespect to anyone that comes to Hoonah to try to help us clear up some of our numerous problems with the Park...."*

1. Displacement from Glacier Bay has denied a generation of Huna Tlingit part of its cultural heritage and will deprive future generations unless changed. There are still many older people who have fond memories of family bonding while on family outings to gather eggs in Glacier Bay. That they are prevented from reenacting these times with younger relatives and from symbolically connecting with their ancestors in the homeland not only saddens them, but is seen by many to threaten the survival of their culture.

Nina Dick, age 53, expressed this opinion after saying that it has been more than 30 years since her family has had gull eggs:

> …[M]y mom and dad did it for years, and we used to have seagull eggs every year. And then … they closed everything down, and then pretty soon they had to start sneaking around to get [them]. And that was … bad. So we hardly got to taste it because [potential eggers] were afraid of being caught…. Now I don't even know what it's like to go out and get seagull eggs. I never got a chance to go out. Only time we'd get to taste them is when somebody went out there and stole some and brought some in…. I [also] want my grandsons to try seagull eggs….

Edna Skaflestad said she had some gull eggs with her grandpa when she was about six or seven and did not remember what they tasted like:

> …I was never given the opportunity to acquire a taste for them. So I feel that's something taken from us … from this generation, because we've heard how much everybody enjoyed them….

Walter Smith, who was born in 1945, says:

> My family, they haven't had any. Like my kids right now, they haven't had seagull eggs. They've been asking me how it tastes. Don't know how to explain it to them.

Winnie Smith says:

> …[S]ee my children didn't know what seagull eggs look like. They don't know what it is like…. Frank is old enough where he could remember that going with his grandfather out there. But other than that, my children don't know. They haven't been there. And just that one time they went there for a picnic and they were let loose and they were running around on the Marble Island, and that was back in the '60s. And that was the only time they've ever been for seagull eggs and I don't know if the younger ones even remember. See, because of [the] Park Service doing this, our children don't know.

Frank Wright, Jr., states:

> When you take one thing away from an indigenous people, you are eliminating part of their culture. You know the Park Service continues to do this and limit our access to our natural foods, and it's a form of [cultural] genocide. And you know, the seagull egg is important.... Even the way you gather them. How many young people even have an inkling of what it's about.... [M]y daughter... she's never eaten a seagull egg.... We can't go up there and get 'em because the law says we can't.

Lily White explains her feelings:

> Well, it was hard to accept, you know. Us older people that's used to all these things, you know, we took it for granted. But the young generation will feel bad about it for a short time, and so the Park Service told us we could do this just for your generation. The next generation won't care. This what we're afraid of is when they lose caring. We don't want them to lose it.
>
> I think the egg collecting, if we got it back, our children will not forget. The spiritual feeling we talk about, we pass it on to our grandchildren. Now when I sing Tlingit songs, my little grandson, I taught him how to dance. Even if he's playing when he hears this, when I'm singing, I hit the table for them, they'll come running. Try to dance. And he's only two-and-a-half years old.... [T]hat's how come ... we want to keep the tradition of our foods and of, even our very existence with the children, so they can carry on like we did.

2. Elders are deprived of a culturally, socially, and spiritually important food and activity

Elder Frank See, the oldest man in Hoonah, says:

> There's only two ladies older than I am in this village now. I'm the oldest male ... right now of the Tlingit. They talk about it all the time like, like they haven't tasted the seagull eggs for years, you know. They crave it. [They say] I'm hungry for *kwat* [egg].

Tony Mills talks about an older man who has now died:

> ...like this old man Sinclair before he died, he told a judge in Juneau he was talking to ..."How would you like it if I took your bacon and eggs away from you? And what would you eat after that?"

Grace Hillman observes:

> Well, I know a lot of our Native people, our elders, and people that grew up around the food, you know, got used to using it for baking it and whatever, and just making use of the foods they grew up with. I think they kind of miss it.

Elder Sam Hanlon talks about his feelings:

> …[O]ur heart has been saddened by being barred out of Glacier Bay. You know, our people used to live for that day to start picking.

Elder Ester Kaze expresses sadness at the changes she has personally experienced:

> It's part of our ... food. Like if you went to the store and [were] told that you couldn't have any chicken eggs, I mean how would you feel if they told you that? And you really liked eggs.
>
> I feel real sad because we can't go up there, you know [to get food].

Winnie Smith remarks:

> It isn't that we like it [gull eggs] any better. It was just our food. You don't compare it to anything. You can't compare your hen egg to our seagull eggs. You can't because you grew up on what you eat, we grew up on what we eat. This food we grew up on. Then to be cut off it, like suppose all of a sudden they said [there's] a shortage of chickens, you can't have any chicken eggs. Then you don't have… eggs for breakfast.

Elder Adeline St. Clair asserts:

> It's kind of a crime…. Why can't they let us do it just for our food [referring to taking resources in Glacier Bay]? I told a man in Juneau … from the legislature… "I'll give up my subsistence food and go to white-man food, but it's only fair the white people do away with their own food, too. Their steaks, their pot roasts… their chicken…." I said, "For every food I give up you give up one too."

3. Behavior that is defined as responsible by the Huna has been criminalized by the dominant society. A result of this stigma is that those who want to harvest traditional foods must become outlaws. This outcome interferes with interaction between the generations.

Edna Skaflestad expresses her point of view.

> I think what worries me is that … there are still some elders who enjoy having eggs, and… they have family who will still collect for them but… what will happen to them if they get caught doing that…? [A]nd that's basically, I feel, like a right to them….

Eva Davis says:

> All the *Chookaneidi* people in Hoonah, they're all sorry…. Our uncle, related to us, he went hunting in there, got the seal. When he shot one seal he got it on the boat. The Park Service came. They take the gun away and they took that seal away, and they put them in jail…. We used to live in there; [it was] just like an icebox [for our food]…. They took his gun away, and put him in jail until he paid a $500 fine.

Elder Sam Hanlon describes an encounter with a NPS ranger that resulted in him never going back to harvest eggs. After collecting eggs on South Marble Island with a crew of halibut fishermen, his boat was intercepted and boarded. This happened in 1963.

> He pulls out his citation book… [and] he asks me: "Did you pick eggs?" I said, "We sure did, and [they are] going back home with me…." "Well you know you broke the law … by picking the eggs." I told him I didn't know that…. "Well it's against the law so I'll have to write you a ticket." And under my breath I said, "good!" Not knowing anything about the law … I said, "This is going to be a test in the court, isn't it." You know he scribbled everything that he wrote down, tore it up… put it in his pocket…. Says, "No, I'm not going to do it. Just go ahead and take what you have…." That was the last time I ever picked eggs up there.

Winnie Smith says:

> My son was 18 years old when he went up to Glacier Bay. They didn't know the rules of Glacier Bay. Him and [a friend]… they shot a seal there. They picked 'em up and they read them their rights. Charlie said, "I see them read their rights on TV, but I never thought anybody [would] read me my rights...."
>
> So, that's when they found out they couldn't even go into Glacier Bay for the seal, and people just quit going up there for any food.... And that's the same way with the seagull eggs.... We're not allowed to go and get our food.

George Obert states:

> For the past 10 years we've [had to behave as] criminals to gather our own food, and were arrested for one or another [activity] that pertained to our customary and traditional lifestyle.

Dan Neil explains his feelings:

> I know one thing. Seagull egg gathering, whether it be with permission from the Western world or not, I'm going to do it. If I have to become a criminal for something I've done following my grandfathers' footsteps, so be it.... I don't feel like I'm breaking Nature's law. Nature's law is more powerful than man's law.... If you want to see Nature's law broken go to Los Angeles. Go to California. You will see Nature's law broken daily. And it's disgusting. You can't even breathe there. It is humiliating to say that you are a human being there....
>
> It's really a repugnant feeling that the white man would treat us this way. It's absolutely repugnant.... [T]hey don't own [Glacier Bay].... [T]hey never owned it.... [F]or thousands of years my people have been there, my people have had respect for it, my people have managed [Glacier Bay] flawlessly.... I can't speak for everybody or anybody else but my own feelings but... there's really a biased situation there [in the Park]. [It's like:] "What are you doing here? You're not supposed to be here. We're taking care of your home for you. Don't worry about it. Go on now." You get this feeling that you are a second-class citizen. "Go to the back of the bus."
>
> I feel at ease with what I do.... I am a seagull myself. I come from the seagulls.... It's one of my crests.... I served in the Vietnam War, and I got an honorable discharge. So I can't say that I disrespect... the laws. I just don't agree with some of them.

4. As the original inhabitants, the Huna Tlingit see themselves as the "owners" of Glacier Bay. Many assert, rightly or wrongly, that they have not signed agreements relinquishing these land rights.[39] The permitting processes can also be seen as demeaning and in conflict with the perception that it is a Huna right (not a privilege) to harvest food in Glacier Bay.[40]

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[39] A Native claim heard by the U.S. Court of Claims was brought on behalf of all Haida and Tlingit by the Central Council of Tlingit and Haida (Tlingit and Haida Indians v. United States, 1959, 1968). The Council reluctantly accepted a settlement of $7.5 million for 17,400,000 acres, for which the Indian title was judged to have been preempted -- including land taken for the Tongass National Forest, Annette Island Indian Reservation, and Glacier Bay National Monument. This settlement amounted to forty-three cents per acre (Worl 1990:156).

[40] One definition of "homeland" among the Tlingits is a "place where you can dwell and subsist without having to ask permission."

Elder Sam Hanlon says:

> It's always been our rights to be where we're at.... Not our privilege. Nothing more, nothing less. That [is] all we ask....

Elder Jim Austin says:

> ...[T]he United States Constitution is very specific in stating that they cannot take any of our land without just compensation.... The people of Hoonah who do lay claim to Glacier Bay have never been compensated, even allowed to visit their own homeland [except as dictated by the dominant society]. We do not really consider Hoonah our home. We consider Glacier Bay our home. So we need to do a few things like get our land back.

George Dalton, Jr., says:

> I'm kind of upset at the Park Service having to give us permits for this and that for everything in order to get in there. I mean ... we were there even before it became a park ... and national monument.... [And] now they are talking wilderness and trying to stop us from commercial fishing.... It's gonna be a great impact on us.

Maureen Obert says:

> Traditionally we can get seagull eggs. Politically we can't, and it looks like we're going to have to go on one more year traditionally, which is to sneak in.... This is the first time we are going through the process of asking. I feel that we don't have to ask them permission. That we can go out there for our eggs and they can make [a] special ruling for us to remain Tlingits with our customary and traditional way of life.

Ernestine Hanlon expresses her feelings:

> ...[J]ust because something becomes a [designated] wilderness [area] does not stop the fact that we have the right to access our food. And [there also is] an international law that protects this right. And I would really encourage anyone that's studying this to check into the international law as well as the federal.... I would really encourage you to look at the genocide law because I and lots of other people consider what has happened [cultural] genocide committed on our people by Glacier Bay National Park and Preserve.

5. The Huna Tlingit believe that they have been unfairly deprived of a healthy source of food.

Elder Ester Kaze asserts:

> …[T]hat was our food. And they're telling us we can't get it. I mean like up north, we see some books where they had a boatload of eggs. Those … Eskimos, they can get all their eggs. And then we can't.

Frank Wright, Jr., asserts:

> If you get a chicken egg, you get all the chemicals that are put in to a chicken to lay those eggs, you know. They're not a pure egg…. [The] seagull is a natural hunter … so I would prefer to eat that [rather than] to eat a chicken egg if at all possible.

Ernestine Hanlon states:

> [I am] angry that we have to be dictated on what we have to eat. All of us know that white flour, white sugar, white man's food does not agree with us…. Our health … has changed a lot because we have to depend more on the store rather than the land. And our health pays big time. We're having more strokes, more diabetes, more heart problems and of course more alcoholism…. [A]lcohol is here because we're post-traumatic [stress] syndrome people and we can thank the Park Service for that…. I think that we could really begin to heal by [the Park Service] allowing us to eat again -- but what our body needs, not what we're dictated to eat.

6. The Huna define themselves as an integral part of the Glacier Bay ecosystem. From the Huna perspective, their absence from Glacier Bay as part of the food chain alters the natural ecosystem. Being deprived of the ability to take food from the Glacier Bay ecosystem has negative cultural, social, and spiritual impacts on the Huna culture and upon them as individuals. These effects go to the core of Huna cultural and personal identity and represent a profound loss.

Pat Mills talks about Glacier Bay and egg gathering:

> We did not go to Glacier Bay the first time [just] for eggs. We went there to live. And eggs became part of our food. We treasure our food; the things that brought us life; the things that continue our life….
>
> …[W]e respect the seagulls and … we respect Glacier Bay that brought us life, that brought us our identity. This is why seagull eggs are … important … because it's part of the place that made us who we are -- our fathers, our grandfathers…. When you took Glacier Bay away from [us]… you took away our fathers.
>
> [Egg gathering is] special to the community because it affirms who we are and affirms who our fathers are. It affirms why we are here…. It's

> important to the community because it bonds us together as a people and it allows us to do what our fathers have taught us and our uncles....
>
> Sometimes when someone gives me an egg today.... We'll look at the egg. We won't take it [and] eat it right away; we'll look at it. We'll admire it. We'll cherish it. We say these things to ourselves. This may be the last time I may have these eggs. This may be the last time. And some of us, we salt our eggs with our tears. ... I know ... the Park Service is trying to preserve something, but they're not doing a very good job of it. The only thing they're preserving is what the Native people from Huna eat. The rest is being sold -- charter boats, tour boats kayaks, schoolkids from Juneau.... [And] not one seagull egg for the Huna.

Johanna Dybdahl explains the depth of the Huna Tlingit identity with and current commitment to ties to Glacier Bay by saying:

> ...[M]any of us get emotional, and, you know, there's been times when that I've talked to people from the Park that I've ended up crying because this is so much more than a National Park to us.... I think that without the Huna Tlingit presence, you only get part of a national park.... The Huna Tlingits are as much a part of the Park as the glaciers are, as the resources that are in there, as the wildlife is. And to take us and remove us as part of the park, your certainly disintegrate the value ... in the end. The Huna Tlingits are going to continue to hammer it home that this is our traditional homeland....
>
> I will take my children into the park with permission or without.... I will not allow that tie to be cut and as long as our Tlingit people are alive and the stories can be told and shared.... [W]e all agree that we're going to be here forever.
>
> ...[M]any times my people have cried tears over leaving Glacier Bay, and every year at the potlatches that are given in honor of our deceased people, when the Eagle clan is giving the potlatch, the Chookaneidis sing the mourning song for leaving Glacier Bay. And everybody cries because we mourn to this day being forced out of our homeland. And so every year that grief is renewed.

VIII. HUNA TLINGIT GULL EGG HARVEST STUDY CONCLUSIONS

In summary, the authors believe the available evidence supports the following conclusions:

- The harvest of eggs by Huna Tlingit people is traditional in the sense that it was a highly valued regular activity of many Huna families and integrated into the Huna Tlingit seasonal round of hunting, fishing and gathering activities.

- This egg harvest was originally relevant to Huna survival. More recently, it has been maintained as a minor seasonal nutritional contribution but primarily as a tangible symbol of Huna Tlingit identity.

- Gull egg harvests are recalled with a sense of longing by most Huna who remember them. This activity heralded the summer season and strengthened ties to the ancestral homeland. Gull egg harvests were limited to a brief period in late May or June, a time marked by the onset of good weather and the release from the physical and psychological confines of winter. It can be argued that gull egg collecting in Glacier Bay has actually accrued Huna cultural significance in recent times because of its propensity for sustaining ties to ancestral lands.

- Gull egg harvests also united families in a common enterprise. The harvest was a social event. Children traveled with parents and grandparents to the Marble Islands where they were instructed in the proper way to harvest eggs. Many contemporary Huna adults describe the moral instruction they received in conjunction with these family egg-harvest outings. They were shown how to sustainably harvest the eggs and with appropriate respect for the gulls and the importance of sharing the harvest with family and community.

- In the mid-20th century these traditional harvests were strongly focused on the North and South Marble Island Glaucous-winged Gull colonies, which in 1972 numbered approximately 500 pairs each. Other colonies were either too dangerous for easy access, too far from Hoonah for family outings, or by that time overgrown by post-glacial vegetational succession. Eggs of other species would occasionally be harvested, but none provided the same opportunity that the Glaucous-winged Gull colonies did. There is thus no substitute for the South Marble Island colony (with the recent demise of the colony on North Marble) in terms of the core cultural values that traditional Huna egg harvesting sustained.

- Traditional harvest strategies varied. With some exception, these harvests appear to have been based on elementary knowledge of Glaucous-winged Gull nesting behavior and ecology and to have overall been sustainable, given the size of the Huna Tlingit population, access capability, etc. The strategy reported by a majority of respondents involved harvesting the eggs from nests with clutches of one or two eggs, ideally early in the season.

- Traditional Huna Tlingit gull egg harvests were not highly ritualized but were frequently marked by individual spiritual observances, such as first speaking to the gulls to ask permission to take the eggs or to offer thanks for the harvest.

- Gull eggs, after refrigeration became available, were mostly consumed at the time of the harvest or shortly thereafter, rather than saved for potlatches or for ceremonial exchange. Yet, their consumption was an event in and of itself in which sharing within the family and throughout the community was highlighted.

- Huna traditional gull egg harvests were suppressed by the 1960s with the enforcement of the prohibition of gull egg harvesting within Glacier Bay National Monument. Though most Huna respondents had no direct personal experience of enforcement actions by Park personnel, all were aware of specific incidents. Many report having abandoned egg harvesting in order to avoid confrontations with Park authorities.

- Virtually all respondents objected, at times bitterly, to the prohibition of their gull egg harvests. Respondents voiced strong interest in resuming legal gull egg harvests within GNNPP.

Gathering sites as cultural landscapes and traditional cultural properties[41]

The strong attachment of Huna Tlingits to gathering sites such as South Marble Island suggests that these locales may qualify, collectively or individually, as "cultural landscapes" under NPS criteria and as Traditional Cultural Properties under the provisions of the National Historic Preservation Act.[42] The NPS (1994) stipulates that a cultural landscape is a geographic area, including both natural and cultural resources, associated with an historic event, activity or person, and identifies four cultural landscape categories: 1) historic designed landscapes; 2) historic vernacular landscapes; 3) historic sites; and 4) ethnographic landscapes. Categories three and four may be applicable to some traditional gathering sites in Glacier Bay. Similarly, according to *National Register Bulletin*, number 38, a Traditional Cultural Property (TCP) is a place that is: "eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that a) are rooted in that community's history and b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1990). Examples include Native American sacred places, cemeteries, gathering sites and other prominent places that figure in their traditions as well as those of other groups. Although a formal Traditional Cultural Property evaluation is beyond the scope of this investigation, the HTEES interview data suggest that the Huna Tlingit may view

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[41] References for this section are: National Park Service (NPS). 1994. NPS-28: Cultural Resource Management Guidelines. Washington, DC: National Park Service, USDI; Parker, Patricia L., and Thomas F. King. 1990. "Guidelines for Evaluating and Documenting Traditional Cultural Properties." National Register Bulletin 38. Washington, DC: Interagency Resources Division, U.S. National Park Service, USDI.

[42] The National Park Service (NPS 1998) defines a cultural landscape as "a geographic area that includes both cultural and natural resources, associated with a historical event, activity, or person or exhibiting other cultural or aesthetic values." Ethnographic landscapes, a subset of this category, are "associates with contemporary groups and typically are traditionally used and valued". Places or landscapes that are especially associated with the cultural practices of a living community and are rooted in the community's history and present identity may also be eligible for inclusion in the National Register of Historic Places.

South Marble Island, and perhaps other key historic landscapes in Glacier Bay, in such terms. A more detailed investigation of egging sites as cultural landscapes may reveal additional cultural values that these sites hold for the Huna Tlingit beyond egg harvesting and other activities detailed in this report.

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APPENDIX 1: SUBAGREEMENT, RELEVANT SECTIONS ONLY

Cooperative Agreement No. 1443 CA-9000-95-0019
Subagreement No.1, Modification 3

General Project Objectives

(1) To understand the cultural significance and historic use pattern of bird eggs by the Tlingit community of Hoonah and to document these practices within the Glacier Bay National Park and Preserve and environs.

(2) To compare existing biological information on gull colonies within Glacier Bay National Park and Preserve and to link this information with local traditional knowledge.

(3) To demarcate the historic and contemporary use areas for the community of Hoonah and to link these polygons with existing place name data. Both types of information will be produced in a GIS-ready format.

Research Task 1: Documentation of Egging Practices and the Cultural Importance of these Activities for the Residents of Hoonah.

This is a concise study of the egg-gathering strategies used by the community of Hoonah. Both the NPS and the researchers understand that the research methods to be used to accomplish this task will be ethnographic interviews of primary informants; there is no expectation that structured surveys with probability samples will be used. Key research questions:

(1) During the seasonal subsistence round when are gull and other bird eggs gathered? Does their harvest during early spring have special cultural significance (e.g., first fruits ceremonies)?

(2) What species of eggs and how many are currently gathered? What species have historically been harvested?

(3) During the last 50 years leading up to the present, where were these eggs obtained? Specific areas must be referenced on USGS quads. Are there specific clan territories? How have these areas changed over time? What has been the effect of climate change – e.g., has plant succession displaced traditional nesting areas? What is the distribution of traditional gathering sites both within and external to the park? Where are contemporary use areas outside of the park (see Task Three)?

(4) During Traditional and contemporary times who gathers eggs? Nuclear households, extended families, multi-generational task groups? What is the

division of labor associated with these activities? What are the kinship links within and between task groups?

(5) Collect information on the knowledge and ethical values associated with egg gathering and then detail how the composition of task groups passes on this knowledge from one generation to another.

(6) What are the details of gathering practices -- how are eggs identified, harvested, stored, processed (cooked) and consumed?

(7) What are the logistics of egg harvesting? What technology and equipment is used? What are the approximate costs?

(8) Are there any special ceremonies or rites performed during the harvest? What are the rituals of respect, of propitiation?

(9) How are eggs distributed within families, within the community? Are elders given a priority?

(10) How does traditional knowledge influence harvest and conservation practices? For example, is egg removal timed to induce a second brood?

(11) What traditional knowledge exists about gull behavior, distribution of species (both historically and at present), relative abundance through time, relationships with other species, taxonomic considerations.

(12) What is the social context of egg harvests? Is it primarily a family outing? How are eggs used during ceremonial events, e.g., during pole raising?

(13) What are the mythical connotations of egg harvests and consumption?

(14) What part do eggs play in the overall subsistence pattern for the community of Hoonah? What are the changes in this dependence through time? How many are collected by species – currently, historically?

(15) What effect have NPS regulations had upon traditional practices and what adjustments have Hoonah people made to these constraints?

(16) What stories or narratives are currently being told that involves the relationship between the geography, history and influence of NPS on traditional behaviors?

Research Task 2: Review Existing Biological Literature on Gull Populations & Compare this Information with Traditional Practices and Beliefs.

Considerable biological information exists on breeding gull colonies within Glacier Bay National Park and Preserve. For example, Patten has written extensively on the subject including a master's thesis (1974), "Breeding Ecology of the Glaucous-Winged Gull (*Larus glaucescens*) in Glacier Bay, Alaska" and a doctoral dissertation (1980), Interbreeding and Evolution in *Larus glaucescens – Larus argentatus* Complex on the South Coast of Alaska. In addition, a monograph prepared by Patten (1981), "Seasonal

Use of Coastal Habitat from Yakutat Bay to Cape Fairweather by Migratory Seabirds, Shorebirds and Waterfowl" contains a wealth of information that may be of considerable comparative use during the development of an ethno-ornithology (see task 4 below in the previous mentioned Subagreement Modification). Key research questions:

The existing biological information on gull behavior, ecology, abundance and mortality will be reviewed to provide a comparative analysis of the potential impacts of traditional egging activities. Issues such as current colony distribution, variation in pair breeding area, mortality to eggs and chicks, survival rates, gull behavior in limiting plant succession and a variety of other issues will be considered and then comparatively analyzed with information collected from this traditional knowledge project. Any traditional natural history observations (e.g., regarding behavior), ecological insights (e.g., links between gull abundance and fishing success) will be highlighted. Special consideration will be taken of significant events within the gull population, such as the complete breeding failure of the Glacier Bay colony during 1975. What observations and insights do local community members have on these events? Any number of additional collateral issues can be investigated. The community of Hoonah harvests considerable quantities of tidal invertebrates; can they link fluctuations of specific tidal species (or forage fish such as sand lance) with observations of abundance of bird species? Considerable research has been conducted on glaucaus-winged/herring gull hybridization. Can emic taxonomic knowledge shed light on these processes? Do Hoonah community members distinguish between these species; do they use the same criteria; do they observe differences in freshwater/saltwater/estuarine niches exploited by different gull populations?

Research Task 3: Use Area and Site Mapping

The Alaska Department of Fish and Game technical report "Subsistence Harvest and Use of Fish and Wildlife Resources and the Effects of Forest Management in Hoonah, Alaska was written by Schroeder and Kookesh in 1990. In this report are a number of use area maps for the community of Hoonah. Of particular interest are Figure 69, "Area Used by Hoonah Residents for Subsistence Harvest of Fish, Wildlife, and other Natural Resources, 1986" and Figure 70 "Area used by Hoonah Residents for Subsistence Harvest of Black and Brown Bear and Collection of Bird Eggs, 1986." The first map depicts the area where subsistence activities have been conducted during the time community residents have been living in Hoonah. Initial maps were prepared from key respondent interviews. About 60 community residents, including most knowledgeable elders and active hunters, contributed to the field mapping. The second map specifically delineates egg collection sites. However, there is indication that the enumeration of egg collection sites is incomplete. For example, Surge Bay and Deer Harbor on the outer coast of Yakobi Island are (or have been) two egg-gathering sites that were not enumerated in the ADF&G map. Key research questions and work elements:

(1) These maps will be verified with primary informants, paying particular

attention to outer coast egging sites that might have been missed during the 1986 investigations or overlooked because of access difficulties.

(2) Subsistence use areas through time, with special emphasis on egging sites, will be collected. The horizons of this investigation will depend on the time depth of the memory of community informants.

(3) Egging sites will be coded for frequency of use and for preference of use (including stated reasons for these preferences e.g., ease of access).

(4) Finally, existing place-name data need to be overlaid with traditional use areas and gathering sites to present an overall appreciation of Huna subsistence and cultural activities through time. Place-name information may also suggest further avenues of inquiry for Task One or for the ethno-ornithology task. Any tasks added to the research however, will be negotiated to the satisfaction of both the Service and the University.

(5) The impacts of etiquette employed by traditional Tlingit clans in allowing access to their use areas will be noted. That is: Do traditional usufruct rights influence or impede the use or access to harvest sites by other community members?

APPENDIX 2: HUNA TLINGIT EGG COLLECTING INTERVIEW GUIDE

Huna Tlingit Egg Collecting Interview Guide
June 1998

1. Personal question: Name, sex, age, clan & father's clan, Tlingit language ability, where raised?

2. Comments on importance of egg collecting:

    a. to family

    b. to community

    c. special qualities of eggs

3. Tell us how you used to collect eggs. [a narrative description]

4. When collected?

    a. ecological signs of appropriate times

    b. regional variation; outer coast vs. Glacier Bay

    c. deciding if it's the right time (e.g., disappearance of big gulls)

5. Where collected?

    a. place names (Tlingit or otherwise)

    b. clan or family restrictions on access

6. Who collects?

    a. task group composition: kin relations; gender; age; etc.

    b. group size: give example of actual group and its composition

7. How many collected?

    a. now versus past

    b. annual variability of eggs available (e.g., 1975 colony failure in Glacier Bay)

8. How collected?

    a. gear

b. access routes

c. task coordination

d. judging if they're ready or over (e.g., candling)

9. Conservation of eggs (now versus before)?

a. do you collect if more than two eggs? Three? Full set?

b. do you replace embryonic eggs (after candling)?

c. do you clear brush?

d. what happens if someone breaks the rules?

10. How processed & consumed?

a. cooking

b. preserving & storing

c. sharing & trading (gifting at potlatches?)

d. priority for elders?

e. baking cakes

f. medicinal or health values?

11. Ritual, cultural, and spiritual context

a. showing respect

b. special ceremonial roles (e.g., pole raising?)

c. traditional stories?

12. Other species collected? Mew Gulls, Kittiwakes, Aleutian/Arctic Terns, geese, ducks, cormorants, puffins, murrelets, etc.

13. Ecological, phenological, natural history observations

a. habitat choices

b. life history: named stages

c. hybridization

d. population trends/causes

e. other gull predators

14. Comments on Park Service regulation

a. impacts on you & your family, if any

b. how should it be managed

c. special importance of Marble Islands/Glacier Bay sites

APPENDIX 3: HUNA TLINGIT CONTACTS

Huna Tlingit Egg Harvesting Study
*Indicates a noncontributing interview observer.
**Indicates translator or interview assistant only.

Jim Austin	Hoonah	Andrew Johnnie	Juneau
Ken Austin	Juneau	Ida Kadashan	Hoonah
**Ida Brown	Hoonah	Esther Kaze	Hoonah
George, Jr. Dalton	Hoonah	Jenny Lindhoff	Hoonah
*Jim Dalton	Hoonah	Alfred McKinley	Juneau
Richard, Sr. Dalton	Hoonah	*Don Mills	Hoonah
Eva Davis	Hoonah	George Mills	Hoonah
Albert Dick	Hoonah	Tony Mills	Hoonah
*Max Dick	Hoonah	Pat Mills	Hoonah
Nina Dick	Hoonah	Thomas Mills	Hoonah
Johanna Dybdahl	Hoonah	Dan Neil	Hoonah
Elizabeth Govina	Juneau	George Obert	Hoonah
Kathryn Grant	Hoonah	Maureen Obert	Hoonah
Ken Grant	Hoonah	Adeline Saint Claire	Hoonah
Karl Greenwald	Hoonah	Frank See	Hoonah
Ernestine Hanlon	Hoonah	Hilda See	Hoonah
Sam, Sr. Hanlon	Hoonah	Edna Skaflestad	Hoonah
Grace Hillman	Hoonah	Jeff Skaflestad	Hoonah
Ed Hubbard	Hoonah	Keith Skaflestad	Hoonah
Lila Hubbard	Hoonah	Wilbur Skeek	Hoonah
Charles, Jr. Jack	Hoonah	Walter Smith	Hoonah
James Jack Sr.	Juneau	Winafred Smith	Hoonah
Jumbo James	Hoonah	Frank, White Sr.	Juneau
Alice Johnnie	Juneau	Lily White	Hoonah
		Frank Wright	Hoonah

APPENDIX 4: SITES USED IN CONJUNCTION WITH SUBSISTENCE EGG HARVESTS BY HUNA TLINGIT PEOPLE

The following inventory of sites augments the information in Table 7. See notes section below the table regarding the bird species whose eggs are harvested at each and for precise map locations.

SITES IN GLACIER BAY AND ICY STRAIT

1) Point Carolus; SW entrance to GB, about 55 km NW of Hoonah; ***Yáay Shaak'ú*** ("Whale's Little Head"); low productivity for eggs; camping/picnicking site [SF, BF, MM, TA, BH, PL, MI]; traditional salmon fishing camp; had cabins and smokehouses up until WW II.

2) Young Island; N of Bartlett Cove in GB; about 65 km NW of Hoonah; ***K'wát' Aaní Luyee*** ("Area Below the Point of Seagull Eggs Land"); medium productivity for eggs; camping/picnicking site [SF, BF, MM, TA, BH, PL, MI]; good for goose and duck eggs, grouse, ptarmigan.

3) Beardslee Islands; N of Bartlett Cove in GB; about 70 km NW of Hoonah; ***X'áat'x'i Xhoo*** ("Among the Islands"); medium productivity for eggs; camping/picnicking site [SF, BF, MM, TA, BH, PL, MI]; good for goose and duck eggs, grouse, ptarmigan.

4) Flapjack Island; NW island in Beardslee Islands., GB; about 80 km NW of Hoonah; medium productivity for eggs; camping/picnicking site [SF, BH, PL, MI]; launch point for Marble Is.

5) Goose Island (= Eider Island); in Beardslee Is., GB; about 70 km NW of Hoonah ***T'aawákh X'áat'i***? "(Goose Island"?); low productivity for eggs; camping/picnicking site [SF, BH, PL, MI]; not commonly used.

6) Strawberry Island; W of Beardslee Islands., GB; about 70 km NW of Hoonah; ***L'awx'áat'I***, ("Glacial Sand Island"); medium productivity for eggs; camping/picnicking site [SF, BF, MM, BH, PL, MI]; plant succession has reduced the island's productivity for berries and bird eggs. One consultant recalls, "When my dad was a little kid, Strawberry Island had no trees on it, and they used to use seal skins to slide down on the sand.... Now look at the growth on it."

7) Boulder Island; NW of Beardslee Islands., GB; about 80 km NW of Hoonah; medium productivity for eggs [SF, MM, BH, PL, MI]; close to Marble Islands and accessible, but not as easy to land on or as productive as S. Marble Island.

8) Willoughby Island (formerly); large Island (3.8 mi. long) in lower GB; about 80 km NW of Hoonah; ***Shatláaxh Tlein*** ("Big Shaggy Top"); high productivity for eggs; camping/picnicking site [SF, BF, MM, TA, BH, PL, MI]; plant succession has , however, reduced the island's productivity for bird eggs.

9) Francis Island; small island N of Willoughby in GB; about 85 km NW of Hoonah; ***Shaltláaxh K'átsk'u*** ("Small Shaggy Island"); medium productivity for eggs [SF, BF, MM, BH, PL, MI]; plant succession has reduced the island's productivity for bird eggs.

10) Leland Island; small island N of Beartrack Cove in GB; about 80 km NW of Hoonah; ***Hintuxux'aayí*** (***T'ooch' X'áat'***) ("Seagrass Point Under Water") ["Black Island"]); medium productivity for eggs; camping/picnicking site [SF, BF, MM, BH, PL, MI]; plant succession has reduced the island's productivity for bird eggs.

11) South Marble Island; small island NW of Beartrack Cove; about 80 km NW of ***HoonahIxde Néixh' X'áat'I*** ("South Marble Island"); high productivity for eggs; camping/picnicking site [SF, BF, MM, BH, PL, MI]; most preferred site—accessible, sheltered, close to other activity sites; perhaps longest history of use; high level of traditional ecological knowledge; sacred to the Chookaneidí but hallowed by all descendants of Glacier Bay.

12) North Marble Island (formerly); small island NW of Beartrack Cove; about 85 km NW of Hoonah; ***Nánde Néixh' X'áat'i*** ("North Marble Island"); high productivity for eggs; camping/picnicking site [SF, BF, MM, BH, PL, MI]; plant succession has reduced the island's productivity; South Marble Island is preferred by most gatherers.

13) Drake Island; large Island (3.5 mi. long) SE of Geikie Inlet in GB; about 85 km NW of Hoonah; ***X'áat' Kulasá*** ("Narrow Island"); medium productivity for eggs; camping/picnicking site [SF, BF, MM, TA, BH, PL, MI]; the island's lake was known especially for Mallard and goose eggs: "[T]here's a little lake back there and over the years it's grown over … but before it just used to be a short hike" (Tom Mills pers. comm.); Hoonah native Leslie Hillman died there; also a fort site on the island (Goldschmidt and Haas 1997).

14) Sturgess Island; small island W of Sandy Cove in GB; about 90 km NW of Hoonah; medium productivity for eggs; camping/picnicking site [SF, BF, MM, BH, PL, MI]; plant succession has reduced the island's productivity for bird eggs.

15) Sebree Island (at Tlingit Point); island at junction of Muir Inlet and GB; about 95 km NW of Hoonah; low productivity for eggs; camping/picnicking site [SF, BF, MM, BH, PL, MI]; plant succession has reduced the island's productivity for bird eggs.

16) Garforth Island; small island at the E entrance to Muir Inlet in GB; about 100 km NW of Hoonah; ***Wasus X'aat'I*** ("Cow Island"); low productivity for eggs; camping/picnicking site [SF, BF, MM, TA, BH, PL, MI]; mountain goat cliffs nearby.

17) Sealers Island; small island NW of Wachusett Inlet in Muir Inlet in GB; about 120 km NW of Hoonah; ***Aan Adéli*** ("Village Watchman"); medium productivity for eggs; camping/picnicking site [SF, BF, MM, MI]; this was said by one source to be the site of gull egg massacre by the "Coast Guard" (RD) in the 1960s or 1970s.

18) Tidal Inlet (islands? GD); inlet on E side of N arm of GB; about 105 km NW of Hoonah; ***Tsalgi Gheeyí*** ("Ground Squirrel Bay"); medium productivity for eggs [SF, BF, MM, MI]; not commonly used.

19) Triangle Island (Queen Inlet); small island at the head of Queen Inlet in GB; about 120 km NW of Hoonah; medium productivity for eggs [SF, BF, MM, TA, PL, MI]; not commonly used.

20) Russell Island rocks; SE of Russell Island in NW GB; about 135 km NW of Hoonah; medium productivity for eggs [BF, MM, TA]; this locale became a preferred site when islands further down the bay became overgrown.

21) Composite Island; island at the mouth of Queen Inlet in GB; about 120 km NW of Hoonah; medium productivity for eggs; camping/picnicking site [BF, MM, TA]; this locale became a preferred site when islands further down the bay became overgrown.

22) Skidmore Bay islands; in NW arm of GB above Hugh Miller Inlet; about 110 km NW of Hoonah; medium productivity for eggs [BF, MM, TA, PL, MI]; not commonly used.

23) Hugh Miller Inlet (islands); in NW arm of GB; about 100 km NW of Hoonah; ***Anaxhkhuyaawal'ix'i Yé*** ("Where the Glacier Ice Broke Through"); medium productivity for eggs; camping/picnicking site [SF, BF, MM, TA, BH, PL, MI]; this was also a favorite soapberry picking site and considered very accessible by boat.

24) Lone Island; small island NW of Geikie Inlet in GB; about 95 km NW of Hoonah; ***L'ée Hítk'*** ("Little Blanket House"); medium productivity for eggs; camping/picnicking site [SF, BF, MM, PL, MI]; though small, this site was considered very productive.

25) Geikie Rock; small exposed rock at the mouth of Geikie Inlet in GB; about 90 km NW of Hoonah; ***Ts'agéegi Té*** ("Little Seabird Rock"); productivity for eggs uncertain [SF, BF, MM, PL, MI]; small but close to other egging sites at Lone, Drake, and Marble islands.

26) Shag Cove rock (Geikie Inlet); at the mouth of Shag Cove on the SE side of Geikie Inlet in GB; about 90 km NW of Hoonah; productivity for eggs uncertain [SF, BF, MM, PL, MI]; not commonly used.

27) Grouse Fort; between Homeshore (E of Excursion Inlet) and Swanson Harbor; about 25 km NE of Hoonah; ***Kax'noowú*** ("Grouse Fort"); low productivity for eggs; camping/picnicking site [SF, BF, TA, BH, PL, MI]; former Huna village site; was especially important for upland birds such as grouse and ptarmigan.

28) Sister's Island; in Icy Strait about 18 km NE of Hoonah; ***L'aa T'un X'áatk'I*** ("Little Breasts"); productivity for eggs uncertain [SF, BF, MI]; not a gull egg harvest site; used occasionally for oystercatcher eggs.

29) Pulizzi Island (Spasski Bay) (possibly Light Island]); island at Spasski Bay about 15 km E of Hoonah; productivity for eggs uncertain [SF, BF, TA, BH, PL, MI]; not a gull egg harvest site; used occasionally for oystercatcher eggs.

EXPOSED WATERS: OUTER COAST AND CROSS SOUND

30) Inian Islands: Middle Pass Rock; small island in the W part of the middle passage in the Inian Islands in Cross Sound; about 70 km NW of Hoonah; ***Lugheiyá***? 'Nose' (check location); medium productivity for eggs [SF, MM, PL, MI]; associated with commercial fishing in Inian Island (now closed); difficult to access due to strong tides and big swells; considered dangerous; usually only men harvest (Ken Grant; Johanna Dybdahl).

31) Greentop (local name); off Point. Wimbledon near the SW entrance to Dundas Bay; about 75 km NW of Hoonah; ***Neixinté Seiyí*** ("Rock Below the Green Bluff"); productivity for eggs uncertain [SF, BF, MM, TA, BH, PL, MI]; this site was proximal to Middle Pass Rock and Georges Island, and the harvest at all three sites was contemporaneous; location needs to be verified.

32) George Islands, outside Elfin Cove; at the mouth of Port Althorp in Cross Sound; about 75 km NW of Hoonah; ***Khushnaaxh'I*** ("Tumbling Water Shelter"); medium productivity for eggs [SF, MM, TA, BH, PL, MI]; Huna Tlingits that harvested at Middle Pass Rock often harvested here as well; associated with commercial fishing activities in Cross Sound and the outer coast.

33) Table Rock (aka "Bird Rock"); just S of Three Hill Island, near Point Lucan in Cross Sound; about 80 km W of Hoonah; ***Tawéik'*** ("Coming Up Over It"); medium productivity for eggs [SF, BF, MI]; this site is still used by some Natives in Pelican, but is not considered very accessible by Huna Natives; site was used in the past when fishing in the Inian Islands.

34) Point Lucan and Column Point, rock; halfway between Point Lucan and Column Point off Althorp Peninsula, Cross Sound; about 85 km W of Hoonah; ***Lix' Xágu*** ("Broken Rock Sandbar") (check location); productivity for eggs uncertain [SF, BF, TA, BH, PL, MI]; location needs to be checked.

35) Surge Bay rocks; at the mouth of Surge Bay on the outside of Yakobi Island near the SW entrance to Cross Sound; about 110 km W of Hoonah; ***Tsaa Aayi*** ("Seal Country") (check location); productivity for eggs uncertain [SF, BF, MM, TA, BH, PL, MI]; not commonly used; Surge Bay is a former village site (Frank See).

36) Yakobi Rock; just W of Yakobi Island at the SW entrance to Cross Sound; about 105 km W of Hoonah; ***Yeiyá*** ("On the face of Yei") (Yakobi Island?) medium productivity for eggs [SF, BF, MM, TA, BH, PL, MI]; this site is considered to be productive but not very accessible due to its distance from Hoonah and exposure to waves and ocean swells; it was used occasionally in the past when commercial-fishing activities brought Hunas to the outer coast in spring.

37) Graves Rocks: Egg Island; NW of Cape Spencer on the outer coast; about 110 km NW of Hoonah; ***Lakanakháa*** ("Man's Mouth"); medium productivity for eggs [SF, BF, MM, TA, BH, PL, MI]; one island among the rocks was considered productive for gull eggs and was referred to as "egg island" (Ken Grant); exposed and difficult to access.

38) Libby Island, rocks inside; NW of Cape Spencer on the outer coast; about 115 km NW of Hoonah; ***Lakweishnaxh Táak***? ("Inside") [refers to Murk Bay]; medium productivity for eggs [SF, BF, MM, TA, BH, PL, MI]; not commonly used.

39) Dixon Harbor: lake; NW of Cape Spencer on the outer coast; about 125 km NW of Hoonah; low productivity for eggs; camping/picnicking site [SF, BF, MM, TA, BH, PL, MI]; this was mainly a site for duck and goose hunting and egg gathering. It was not associated with seabird eggs.

40) Boussole Arch; NW of Cape Spencer off the tip of Boussole Head; about 130 km NW of Hoonah; ***Ghaanaxháa*** ("Smokehole"?); medium productivity for eggs [SF, BF, MM, TA, BH, PL, MI]; this is a sacred landscape for the T'akdeintaan clan, who use the site and the flocks of kittiwakes that occupy it (***kh'eikh'w***) as one of their crests; it is difficult to access but was used by the T'akdeintaan, who have no prohibition on consuming kittiwake or gull eggs.

41) Astrolabe Point; NW of Cape Spencer at the tip of Astrolabe Peninsula; about 125 km NW of Hoonah; productivity for eggs uncertain [SF, BF, MM, TA, BH, PL, MI]; also productive for kittiwakes as well as gulls.

42) Lituya Bay: Cenotaph Island on the outer coast SE of Cape Fairweather; about 185 km NW of Hoonah; ***Kanaxhdakheen*** ("Flock Flying Over"); high productivity for eggs; camping/picnicking site [SF, BF, MM, TA, BH, PL, MI]; high productivity for terns and kittiwakes, but medium productivity for gulls.

SITES OUTSIDE OF HOONAH *KWÁAN* TERRITORY

43) Tenakee: Goose FlatsTenakee/Wooshekeetaan; ***T'aawákh X'aayí*** ("Goose Flats"); medium productivity for eggs.

44) Freshwater Bay, island; Tenakee/Wooshekeetaan; ***Tsaa Eejí*** ("Seal Reef"); medium productivity for eggs; camping/picnicking site.

45) Haenke Island, Disenchantment Bay; Yakutat; ***K'wat' X'aat'i*** ("Bird Egg Island"); high productivity for eggs.

46) Kanak Island; Yakutat; ***Ginákh*** (Alutiiq for "Bird Egg Island"; high productivity for eggs.

47) Taku Glacier (Juneau); Taku; ***T'aawákh Khu Sít'*** ("Geese Flooding Glacier"?)

48) Mendenhall Glacier (Juneau); Auk; ***Aak'w T'áak Sít'*** (***Sít' Dleey Shanáa***) ("Glacier Inland of Auke Lake" ["Glacier Over the Head of Which is Meat"]); medium productivity for eggs.

49) Mayflower Island (Juneau); Taku; low productivity for eggs.

50) Baili Rock/Seagull Island; Sitka; ***Kaghanú***?

51) Hazy Islands (Kake); Sitka; ***Deikinoow*** ("ay Outside Fort"); high productivity for eggs.

52) Lazaria Island (Sitka); Sitka; ***Kanas X'í*** ("Edible Plants"?); high productivity for eggs.

53) Loon Island (Sitka); Sitka.

54) Forrester Island (Klawock); ***Gaaskhu*** (Haida); high productivity for eggs.

55) Dundas Island; Tongass.

56) Zayas Island; Tongass.

57) Raspberry Island (Shelikof Strait); Kodiak; high productivity for eggs.

APPENDIX 5: SCIENTIFIC AND TLINGIT SPECIES NAMES

Table 13. *Cross References for Common Names, Tligit Names and Scientific Names of the Various Species in Glacier Bay Area.*

Common Name	Tlingit Name	Scientific Name
BERRIES	***tléikw***	
bearberry (kinnikinnick)	***tínx***	*Arctostaphylos uva-ursi*
blueberry, generic and oval-leaved	***kanat'á***	*Vaccinium ovalifolium*
blueberry, Alaskan (ripens later)	***naanyaa kanat'aayí***	*Vaccinium alaskaense*
blueberry, bog	***ts'éekáxk'w***	*Vaccinium uliginosum*
blueberry, dwarf	***kakatlaax***	*Vaccinium caespitosum*
cloudberry, yellow	***néx'w***	*Rubus chamaemorus*
cranberry, bog	***k'eishkaháagu***	*Oxycoccus microcarpus*
cranberry, highbush	***kaxwéix***	*Viburnum edule*
cranberry, lowbush (ligonberry)	***dáxw***	*Vaccinium vitis-idaea*
current, gray	***shaax***	*Ribes bracteosum*
current, swamp	***kaneilts'ákw***	*Ribes lacustre*
elderberry, red	***yéil'***	*Sambucus racemosa*
huckleberry, red	***tleikatánk***	*Vaccinium parvifolium*
nagoonberry	***neigóon***	*Rubus arcticus*
baspberry	***tlekw yádi***	*Rubus idaeus (R. pedatus)*
salmonberry	***was'x'aan tléigu***	*Rubus spectabilis*
soapberry	***xákwl'i***	*Sheperdia canadensis*
strawberry, seaside	***shákw***	*Fragaria chiloensis*
thimbleberry	***ch'eix'***	*Rubus parviflorus*
OTHER PLANT RESOURCES		
alder, red	***shéix'w***	*Alnus rubra*
alder, beach	***keishísh***	*Alnus sinuata*
cedar, red	***laax***	*Thuja plicata*
cedar, yellow	***xáay***	*Chamaecyparis nootkatensis*
devil's club	***s'áxt***	*Oplopanax horridum*
fireweed	***lóol***	*Epilobium angustifolium*
grass, creek	***chookán***	
hemlock inner bark	***sux'***	*Tsuga heterophylla*
Indian celery	***yaana.eit***	*Heracleum lanatum*
Indian potato	***tséit***	*Potentilla anserina*
Indian riceroot	***kóox***	*Fritillaria camschatcensis*
Indian rhubarb	***tl'ak'wúch***	*Polygonum alaskanum*
nettles		*Urtica dioica*

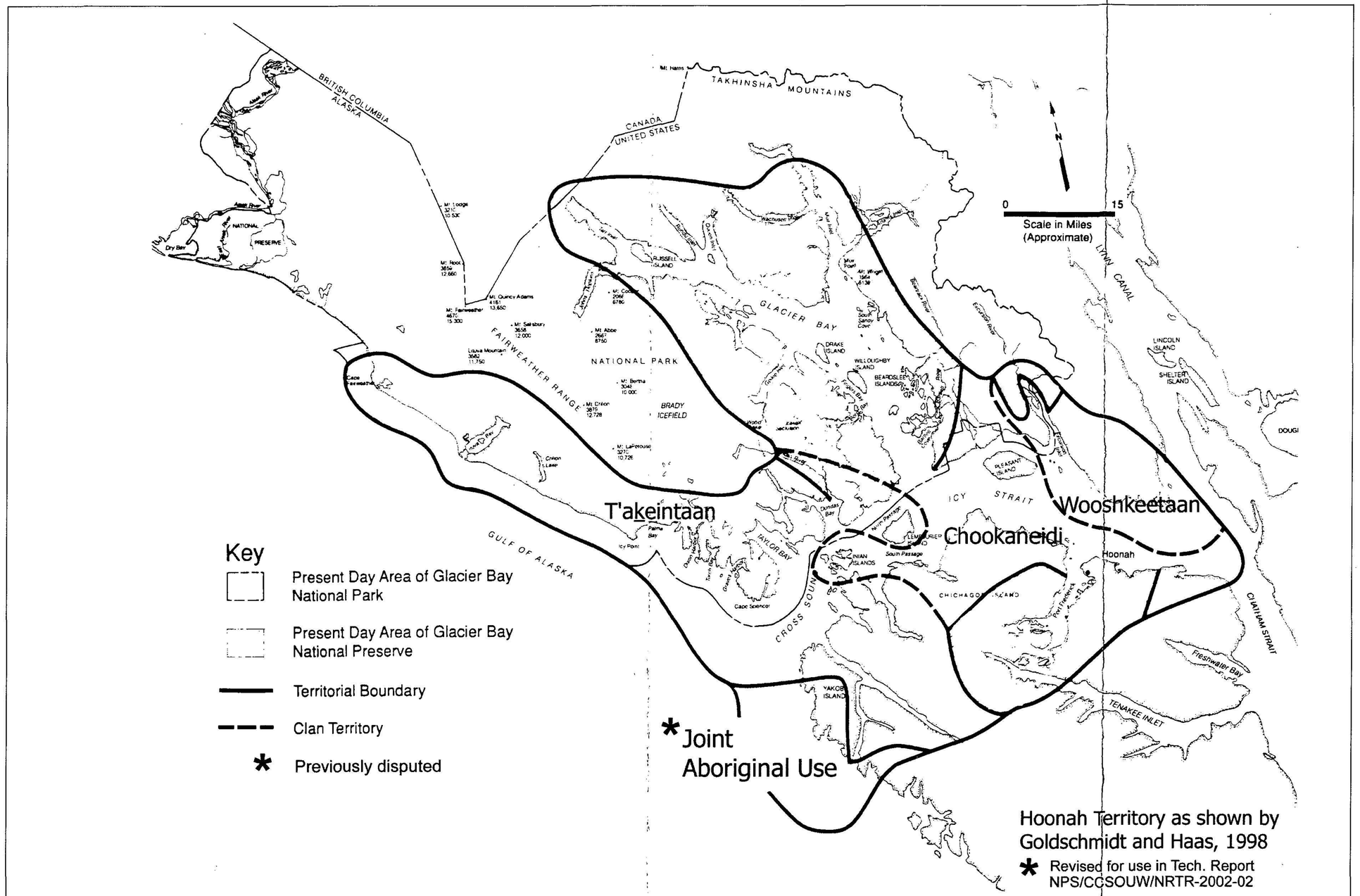
Table 13. *Continued*

Common Name	Tlingit Name	Scientific Name
rutabaga	***unuhòo***	*Brassica napabrassica*
sea laver		*Porphyra spp.*
seaweed, ribbon	***k'áach'***	*Palmeria palmata*
skunk cabbage	***x'áal'***	*Lysichiton americanum*
spruce, sitka	***see'c***	*Picea sitchensis*
tobacco		*Nicotiana quadrivalvis*
wood fern	***k'w'úlx***	*Dryopteris spp.*
SHELLFISH		
abalone	***gúnxaa***	*Haliotis kamtschatkana*
clam, butter	***gaal'***	*Saxidomus giganteus*
clam, horse	***yeis***	*Tresus nuttalli*
clam, littleneck	***tl'ildaaskeit***	*Protothaca straminea*
cockles	***yalooleit***	*Clinocardium nuttalli*
crab, box		*Lopholithodes spp.*
crab, Dungeness	***s'áaw***	*Cancer magister*
crab, king	***x'éix***	*Paralithodes camtschatica*
gumboots (= chitons)	***shaaw***	*Katharina tunicata*
limpet	***yéil ts'áaxu***	*Acmaea spp.*
mussel, blue	***yaak***	Mytilidae spp.
sea urchin	***nées'***	*Strongylocentrotus spp.*
MAMMALS		
bear, black	***s'eek***	*Ursus americana*
bear, brown	***xóots***	*Ursus arctos*
deer	***guwakaan***	*Odocoileus hemionus*
goat, mountain and/or sheep, mountain or Dall's	***jánwu***	*Oreamnos americanus* and/or *Ovis dalli*
marten	***k'óox***	*Martes americana*
mink	***nukshiyáan / lukshiyáan***	*Mustela vison*
otter, land and/or otter, sea	***kóoshdaa***	*Lutra canadensis* and/or *Enhydra lutris*
sea lion, Steller's	***taan***	*Eumetopias jubata*
seal, hair or harbor	***tsaa***	*Phoca vitulina*
whale, humpback	***yáay***	
whale, killer (= orca)	***keet***	*Orcinus orca*
wolf	***gooch***	*Canis lupus*
wolverine	***nóotkw***	*Gulo gulo*

Table 13. *Continued*

Common Name	Tlingit Name	Scientific Name
FISHES		
cod, black	***ishkéen***	*Anoplopoma fimbria*
cod, Pacific	***s'áax'***	*Gadus macrocephalus*
halibut	***cháatl***	*Hippoglossus stenolepis*
herring, Pacific	***yaaw***	*Clupea harengus pallasi*
hooligan (= eulachon, smelt)	***saak***	*Thaleichthys pacificus*
red snapper	***léik'w***	*Sebastes ruberrimus*
salmon, coho	***l'ook***	*Oncorhynchus kisutch*
salmon, dog	***téel'***	*Oncorhynchus keta*
salmon, king	***t'á***	*Oncorhynchus tschawytscha*
salmon, pink or humpy	***cháas'***	*Oncorhynchus gorbuscha*
salmon, sockeye	***gaat***	*Oncorhynchus nerka*
sculpin, bullhead	***wéix' / tlóox***	*Cottidae spp.*
sea bass, black	***lit.isdúk***	*Stereolepis gigas*

APPENDIX 6: MAP OF HUNA TLINGIT TRIBAL TERRITORY, GOLDSCHMIDT AND HASS



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environment and cultural values of our national parks and historical places, and providing for enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interest of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public land and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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