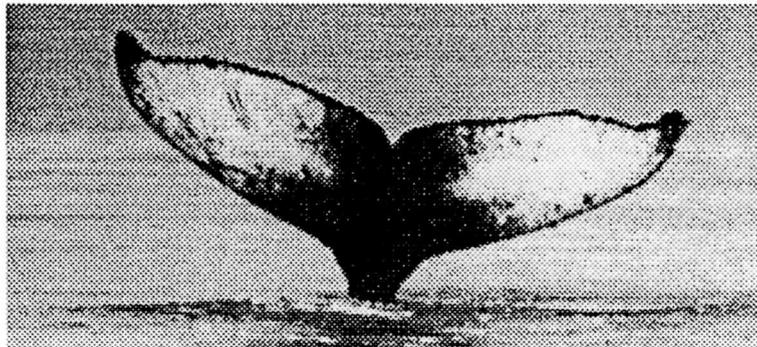


# Advances Great and Small

## Glacier Bay National Park and Preserve

### Resource Management Newsletter

1995-96



#### ***A Whale of a Year***

In response to recommendations from National Marine Fisheries Service (NMFS), NPS continues to monitor whale numbers in Glacier Bay from June 1 through August 31 annually. The surveys have been conducted with consistent methods and effort each year to ensure comparability between years. Various parameters are used to characterize the humpback whale population, including the number of individuals identified, resident times, spatial and temporal distribution, calf production, and feeding behavior. Human-whale interactions including entanglements in fishing gear and vessel disturbance are also documented as part of the monitoring methodology, though no humpback whale entanglements or collisions with vessels were observed or reported in Glacier Bay or Icy Strait in 1995.

This year biologists observed the second highest number of humpback whales in the study area since 1985, although the proportion of resident whales was relatively low. A total of 58 individual whales were photographically identified in Glacier Bay and Icy Strait between end of May and end of August. Of this count, 18 whales (29%) were common to both areas. Many of the whales identified this summer

are individuals that return annually to the Glacier Bay/Icy Strait region. Researchers presume that whale movement and distribution within the study area are related to prey distribution and abundance, although no recent quantitative data are available to confirm this.

Chris Gabriele presented the results of recent studies on humpback whale social behavior in a poster session at the Society for Marine Mammalogy conference in Orlando, Florida in December 1995.

Her studies indicate humpback whales in SE Alaska appear to associate repeatedly with preferred feeding partners within and between years. Sighting histories of 93 individually-identified whales in Glacier Bay and Icy Strait were observed in 824 groups between 1982 and 1994. Long-term associations among humpback whales may be adaptive because learned coordinated behavior may maximize feeding success in areas where predictable prey sources are used.

The Park plans to increase efforts directed at whale research by elevating the whale biologist position to full-time, and by hiring a biotech to assist in both field studies and data compilation.

*For more information contact Chris Gabriele, Wildlife Biologist. (Technician Kirsten Englund)*

## **Fisheries Research in the Park**

*For more information contact Chad Soiseth, Aquatic Ecologist.*

### **Up the Creek**

RM staff completed survey work focused on: (1) compiling all recent and historical information related to salmonid and other freshwater fish species presence, distribution, and abundance in Park streams, and (2) summarizing this information to provide a baseline for future work on salmonids and stream resources. More than 2300 records on fish species presence, distribution, and abundance were recorded from 35 sources of stream survey information. Information for more than half of the 300-plus Park streams exists.

Sixty-two percent of the 156 surveyed streams contain fish. Thirteen different species occur among these streams and up to 11 different species exist within individual streams. However, the majority (70%) of surveyed streams contain two or fewer species. Pink salmon and Dolly Varden char are the two most commonly occurring species in coastal streams, based on available information. Salmonid escapement in Glacier Bay streams appears comparable to escapement for these species throughout Southeast Alaska and British Columbia.

### **Coho Colonizers**

A 2-year collaborative effort between NBS and NPS researchers to understand the natural colonization of streams by coho salmon in Glacier Bay concluded in 1995. This research focused on: (1) evaluating supposed source populations and the means by which coho colonization occurs among variable age streams within and adjacent to Park waters, and (2) obtaining a library of genetic markers for genetic stock identification. This research may have important implications for reestablishing salmonid stocks throughout the Pacific Northwest and in determining stock identity in mixed stock fisheries.

Evidence of high levels of genetic variation in a portion of Park streams sampled suggest that colonization by coho may have initially occurred through one or more events with genetic contributions from many individuals, several colonization events by fewer individuals, or an on-going process of continual gene flow. Significant inter-stream differences in gene frequency suggest many different genetic sources for coho populations currently in Park streams or random changes in gene frequency following initial colonization.

## **Bridging Troubled Waters: Commercial Fishing in Glacier Bay**

Fishing was a way of life in Glacier Bay long before the concept of National Parks was even contemplated and it remains so today. More recently however, ANILCA and the Wilderness Act both prohibited commercial activities in Wilderness; the application of these and other regulations and statutes to commercial fishing is currently being reviewed. Park staff are consulting with ADF&G, commercial fishers, conservation groups and neighboring communities in the search for resolution of this issue. Superintendent Jim Brady has stipulated four outcomes for these discussions: 1) establish a core protected area within the bay, 2) recognize traditional native Tlingit fisheries, 3) co-manage Park fisheries with ADF&G exclusive of the bay proper, and, 4) evaluate impacts of sport fishing on park resources and values.

Park managers initiated several projects to clear the murky waters surrounding these issues. With stakeholder input we are developing a chronology and associated bibliographic database of actions that have affected fisheries since the turn of the century. Park staff will solicit input from gear groups, ADF&G and other stakeholders to define and characterize commercial fishing activity in Park waters. We are also analyzing data collected during surveys of commercial Dungeness crab and Pacific halibut fishery openings in 1992 through 1994. Park staff will use this information to develop and refine future monitoring protocols and explore strategies for obtaining high quality catch data with ADF&G. In addition, we secured funding for a cooperative study with the Department of Anthropology at the University of Alaska, Anchorage, to investigate and quantify the human dimension of commercial fishing in Glacier Bay. The NPS faces a daunting challenge in the resolution of this extremely complex and contentious issue.

## **Coastal Inventory Project**

In 1995 the Park initiated a Coastal Inventory Project to design a protocol which would map important coastal resources and integrate them into a working Geographic Information System (GIS). This comprehensive data base will provide resource managers with the means to make timely evaluations and decisions concerning coastal issues. Applications of the project might include identifying sensitive shoreline types, assessing critical wildlife habitat (nesting, breeding sites, etc.), identifying significant archeological or historical sites, and evaluating recreational or other human impacts.

Two 2-person teams mapped and inventoried over 100 miles of the Park's coastline during the 1995 field season. Sections of coastline that could not be mapped on foot (cliffs, glaciers, etc.) were mapped by skiff. Data files are now being imported into the GIS using ARC/INFO software. Once the GIS is fully operational, resource managers will be able to easily access, query, and plot maps displaying shoreline characteristics of all mapped areas.

In an effort to share its recent ideas and experiences, the coastal team visited and mapped the shorter shorelines of two of its neighboring "cluster" Parks, Sitka National Historical Park and Klondike Goldrush National Historical Park. Ideas for the future include the integration of high-resolution aerial photography, and the establishment of a centralized GIS program that would serve four Southeast Parks in a "coastal cluster" (Glacier Bay, Sitka, Klondike Goldrush, and Wrangell-St. Elias).

*For more information contact Lewis Sharman, Coastal Ecologist (Technicians Dan Van Loouwen, Liz Solomon)*

## **Kittiwakes and Eagles**

Resource Management staff monitored the productivity of two of Glacier Bay's resident bird species last summer. In both cases results seemed to coincide with area trends. In a survey of 156 bald eagle nests, the eagles fledged a rousing 0.6 chicks per occupied territory, about average for Southeast Alaska. Black-legged kittiwakes on the other hand mirrored their North Pacific population's tendency toward breeding failures. The Margerie Glacier colony produced no chicks for the second year in a row and the fourth year out of the last five. Breeding population numbers have rebounded since 1993, however, and despite annual fluctuations appears to be holding steady at over 4,000 birds. NBS has initiated a foraging ecology study to determine where the parents feed and whether food supply plays a role in the low productivity exhibited by this colony.

*For more information contact Rusty Yorxa, Wildlife Technician. (Technicians Mary Kralovec and Asia Masolko)*

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## **Proceeding With the Proceedings**

Proceedings of the Third Glacier Bay Science Symposium 1993 are now published, and are being distributed to conference contributors and participants. Symposium topics included Geology and Climate Change, Terrestrial Ecosystems, Freshwater Ecosystems, Marine Ecosystems, and Tlingit History, Habitation and Resource Use. Address corrections or requests for copies may be forwarded to Ms Bobbi Foster, Glacier Bay National Park and Preserve, PO Box 140, Gustavus, AK 99826, (907) 697-2230.

## **Free to Good Home**

**The following publications are available for distribution:**

- (1) **Culturally Modified Trees at Bartlett Cove, Glacier Bay National Park, Alaska. 1994.**  
Charles M. Mobley & Associates.
- (2) **Glacier Bay National Park and Preserve, Historic Resource Study. 1995.** Rick Kurtz
- (3) **Land Reborn: A History of Administration and Visitor Use in Glacier Bay National Park and Preserve. 1995.** Theodore Catton.

## **Vessel Management**

Glacier Bay released (finally) a draft Vessel Management Plan (VMP) and Environmental Assessment in June 1995. The VMP describes six alternatives for managing vessel traffic in the park. The proposed alternative would increase cruise ship entries into Glacier Bay by 72%; the alternative did not increase access for other vessel classes. Mitigation measures including expanded whale waters, closure of wilderness waters to vessels during the summer season, and vessel operating restrictions were designed to mitigate the potential effects of increased cruise ship traffic. Glacier Bay and Environmental Quality staff held six public meetings to solicit comment on the range of alternatives. The majority of commenters (about 85%) were opposed to the proposed alternative. Commenters were concerned that air quality, water quality, biological resources, and visitor experience would be compromised by cruise ship increases. The majority of commenters (about 85%) favored Alternative 4 which proposed decreased vessel entries for all vessel categories.

Based on public comment, Park staff and the System Support Office have developed a revised proposed alternative which will hopefully be published in early March.

*For more information contact Mary Beth Moss, Chief of Resource Management*

## **Wilderness Management**

The allure of paddling a kayak through icebergs near a tide water glacier makes Glacier Bay an increasingly popular destination. In the past three years we have experienced a 60% increase in the number of backcountry users at Glacier Bay. The consequences of this rapid growth are evident; the park is experiencing increased bear encounters, congestion at popular camp sites, formation of unwanted trails, and logistical difficulties accommodating visitors. There are ample indications that this backcountry use will continue to increase in the next few years.

To address these concerns Glacier Bay is initiating a Wilderness/backcountry management program within the Resource Management Division. In an effort to preserve opportunities for solitude and to protect other Park resources, Park staff are currently re-evaluating our backcountry policies. An interdivisional task force is currently developing a policy regarding the distribution of sensitive information such as wolf den locations and cultural sites. Other ongoing projects include the documentation of all backcountry camp locations, and developing protocol for Park staff in the backcountry, revising our researchers' camping requirements, and surveying the park's Wilderness concessionaire for information on visitor backcountry experiences.

*For more information contact Hank Lentfer, Wilderness Specialist*

### **Resource Management Staff 1996 Glacier Bay National Park and Preserve**

Mary Beth Moss, Chief  
Kathy Cushman, Assistant  
Chris Gabriele, Whale Biologist  
Hank Lentfer, Wilderness Specialist  
Lewis Sharman, Coastal Ecologist

Carolyn Elder, Biotechnician  
Wayne Howell, Cultural Specialist  
Beth Mathews, Wildlife Biologist  
Chad Soiseth, Aquatic Ecologist  
Rusty Yerxa, Wildlife Technician

## Seal of Approval

Glacier Bay National Park is home to one of the largest documented aggregations of harbor seals in the North Pacific. Northern (Steller's) sea lions, a threatened species, also rely extensively on haulouts in the Park. Both seals and sea lions are well-known attractions for commercial and private vessels in the Park. And both have experienced population declines of over 80% at some haulouts from central Alaska to the Aleutian Islands. Yet in Southeast Alaska sea lion and seal numbers appear to be relatively stable.

On-going harbor seal studies with the University of Alaska Southeast emphasize standardized census methods, including pup proportions, and comparison of seal behavior (vigilance, resting, etc.) with the frequency of disturbance at specific haulouts.

Studies of northern sea lions and their sensitivity to vessel traffic in the Bay are also continuing. Conclusions from two years of monitoring include

the observation that 25% of marine Park visitors did not observe the Park's 100 yard limit when approaching the South Marble Island sea lion haulout (study area). Private individuals in power or sail boats, and kayakers were more likely to approach the haulout to within 100 yards than regular tour or charter boat operators. Encroachment by private boats and kayaks was also more likely to cause overt disturbance of sea lions at the haulout. Management recommendations resulting from these studies include suggestions for improved compliance with the 100 yard approach limit through (1) visitor education on wildlife viewing and (2) through greater enforcement efforts to reduce the frequency of disturbance at this haulout.

The results of sea lion studies on vessel interactions were presented in a poster session by Beth Mathews at the Society of Marine Mammalogy conference in Orlando, Florida.

*For more information contact Beth Mathews, Wildlife Biologist. (Technician Lara Dzinich)*

## Secrets of the Past

An understanding of Glacier Bay's present and past cultural landscape is emerging through a combination of field investigations, historical research, and the systematic recording of Tlingit land use and place name information. During the summer of 1995 completion of archeological field surveys along the Park's Outer Coast shorelines contributed to knowledge of the past cultural landscape. Archeologists from the University of Alaska and the Park Service completed the surveys, assisted by two Tlingit students. The surveys will help clarify the history of settlement and warfare in the region. A significant find from the 1995 surveys included the location of a refuge settlement

known as "Dry Fort" in Hoonah Tlingit traditions. While radio carbon dates are not yet available, stone and bone artifacts from small test excavations indicate that the forest was used for hundreds of years prior to European contact. Other types of sites discovered by the archeologists included summer villages and camps used during hunting and trading trips. The unusual scarcity of shellfish in site middens hints at disturbance of this food resource by shifts in sea level, though analysis of food remains may yield a more detailed picture of human adaptation to unstable climatic conditions.

An important preliminary conclusion of the Glacier Bay surveys is that few shoreline settlement sites predating the Little Ice Age glacial maximum of 250 years ago will probably ever be found in the Park. This is because the height of the sea reached at that time (and during previous Holocene advances) would have caused most sites to be washed away. Repeated glacial advances have also been a major factor in the erasure of the archeological record. The potential still exists for finding sites of 9,000-10,000 years in age (which would have remained above marine transgressions) or for other older sites (like Dry Fort) where people lived well above the contemporary tide line.

*For more information contact Wayne Howell, Archeologist. (Technicians Pam Carter, Bill Abbot & Mike Mills)*