

Saimaa Lake population could be well monitored and studied using currently available technology. Yet the results presented in the summary seem to indicate that such opportunities are not yet being pursued.

The two papers on catches of ringed seals in the Canadian and Greenlandic Arctic by Reeves et al. and Tielmann and Kapel are useful compilations of data available from fur records kept in both countries. Neither paper goes into the rising costs incurred by the Inuit in hunting ringed seals. The cost of operating machinery and buying modern equipment has had a major negative impact on the overall harvests of seals in the last two decades. The drop in the value of pelts after the anti-seal hunting campaigns, directed at the harp seal industry in the 1960s–70s, further reduced revenues in the already cash-precarious Inuit hunting economy. These changes threaten the livelihood of the full-time Inuit hunters, who are aging and not being replaced by younger Inuit. Hunters remain the main providers of food for the Arctic communities.

Much of the past and recent work on ringed seals has included deriving population estimates from aerial counts. Survey sampling methods have been standardized to some extent largely through the efforts of Canadian researchers in the 1970s and 1980s. Of the three papers dealing with regional population estimates, Kingsley's analysis for the large Baffin Bay area provides the most interesting approach. His calculation of ringed seal abundance is based on (1) direct counts from aircraft and (2) the use of a "top down" model, estimating the number of ringed seals consumed by a given bear population. The two methods appear to give similar estimates. At first glance this is extremely encouraging, but some caution must be used in assessing these results. Many of the factors used to derive estimates of ringed seal numbers in the bear consumption model have yet to be verified by actual data. The same weakness applies to the direct population estimates. Arbitrary adjustments, such as the doubling of seals counted on the ice to account for animals missed during the survey, allow the modeler great flexibility in adjusting his figures according to his own inclination. The arguments can easily become circular and really do not yet provide independent proof that the population estimates of ringed seals are valid.

The remaining four papers are diverse in nature. Kingsley's paper on the failure of reproduction in a group of ringed seals sampled along the Beaufort Sea coast west of Banks Island provides a very interesting insight into the complexity of interpreting age-specific mortality and reproductive data. He reaches a very important conclusion: that reduction of reproduction and subsequent recovery to "normal" levels depends on changes in individual animals' body condition and reproduction status, as well as on shifts ("turnover") within the population. As we begin to evaluate the still unstudied ringed seal populations living in the vast areas of consolidated pack ice in the Arctic, such complicated dynamics will be encountered in such a fluid and less structured habitat.

The remaining three papers fall into the category of data reports and "tidying up" of unpublished results. Netting and tagging results from Greenland reported by Kapel et al. show that ringed seals move between districts in Greenland and sometimes travel long distances. No patterns of movements are discussed, so the results are of limited interest in showing anything new about ringed seal ecology. The paper by Siegstad et al. on the diet of ringed seals is essentially a catalogue of prey species, which does not add any novel or substantial insights into ringed seal feeding ecology. Heavy metal analyses of ringed seal tissues are reported for Greenland ringed seals by Dietz et al. Results are similar to those of studies elsewhere and provide an addition to the overall database.

Scientists interested in this species and other Arctic marine mammals will find this book a useful addition to their reference material. However, this relatively expensive volume is not a book for non-specialists or those with only a casual interest in Arctic marine mammals. With the exception of the overview paper, the articles deal with specific regions and disparate topics. The book is, however, a good compendium of recent studies on the species and contains some ideas on where future research efforts might be directed.

Thomas G. Smith
E.M.C. Eco Marine Corporation
5694 Camp Comfort Road
Garthby Station, Quebec, Canada
G0Y 1B0
E-Mail: emccorp@globetrotter.net

THE HILLSIDE SITE, ST. LAWRENCE ISLAND, ALASKA: AN EXAMINATION OF COLLECTIONS FROM THE 1930s. By DON E. DUMOND. Eugene, Oregon: University of Oregon, 1998. University of Oregon Anthropological Papers No. 55. vi + 199 p., maps, b&w illus., bib., 29 plates. Softbound. US\$15.00 + s&h.

St. Lawrence Island lies in the northern reaches of the Bering Sea, near the strait of the same name where North America and Asia make their closest approach. Archaeological sites in coastal areas bordering the Bering Sea bear witness to a variety of marine hunting cultures that occupied those shores over the past few thousand years. Standing at the crossroads between continents, and at a gateway to the high Arctic, St. Lawrence Island has long been of interest to archaeologists in their search for clues to the development of Eskimo (or Inuit) culture. Included in the St. Lawrence Island alumni are some of the pioneers of Arctic archaeology, including Henry B. Collins, Jr., James L. Giddings, Otto Geist, Froelich Rainey, Hans-Georg Bandi, and James A. Ford.

Among the artifacts that have been found in frozen house remains and middens at archaeological sites on St. Lawrence Island are elaborately decorated pieces fashioned

from walrus ivory. In his classic treatise on the archaeology of St. Lawrence Island, Henry B. Collins, Jr. (1937) identified several styles within this decorative complex, and named them Old Bering Sea 1, 2, and 3. He regarded these styles to be indicators of chronological progressions within a long-lasting Old Bering Sea culture, which he thought occupied an important position in the lineage of Eskimo cultures on both sides of the Bering Sea.

Collins formulated his ideas about the Old Bering Sea culture largely on the basis of finds at archaeological sites near Gambell, a contemporary village on the northwest coast of St. Lawrence Island. Most of the sites at Gambell are situated on a broad gravel beach. One exception is a small cluster of house remains on a talus slope of a low mountain abutting the beach. Collins argued that this "Hillside site" had been occupied before the beach formed and therefore predated the other sites. Only the Hillside site yielded artifacts decorated in Old Bering Sea 1 style. In the pre-radiocarbon dating era of the 1930s, Collins relied on beach ridge chronology and associations of decorative styles and other artifact attributes to assign other Gambell sites to the later Old Bering Sea 2 and 3 phases.

Not all of Collins's ideas about Old Bering Sea culture have withstood the test of time. When radiocarbon dating began to be employed in the 1950s, dates obtained on materials from the Gambell sites failed to support the chronological progression he had suggested. In a broader context, subsequent archaeological research has shown that, while Old Bering Sea culture is strongly represented on Asiatic shores, it is less evident in the American cultural-historical sequence. This has led to a long-running debate among archaeologists about the contribution made by Old Bering Sea culture to the later emergence of Thule culture, which does appear to be the ancestral culture of most, if not all, modern-day speakers of Eskimo languages.

Don E. Dumond seeks to resolve some of the ambiguities in the interpretation of Old Bering Sea culture in *The Hillside Site, St. Lawrence, Alaska—An examination of collections from the 1930s*. As the title of his monograph suggests, Dumond's interpretations of Old Bering Sea culture are based on museum collections from the supposedly earliest site at Gambell. Included in his study are artifacts excavated by Collins in 1930 and by another archaeologist, Moreau B. Chambers, who conducted excavations on Collins's behalf in 1931. Those collections were never fully reported, nor were artifacts from the same site excavated by J.L. Giddings in 1939, which Dumond also includes in his study. Dumond sets three objectives for the present work: to provide detailed descriptions of the Hillside artifacts, to resolve anomalies in the chronological sequence within Old Bering Sea, and to show how the Saint Lawrence Island sites fit within a broader cultural-historical framework.

Dumond describes the Collins/Chambers and the Giddings collections separately, since they appear to represent

discrete components associated with three houses at the Gambell site. He employs functional categories to organize the Hillside artifacts, following a scheme only slightly different from that used by Collins. He describes technological attributes, provides dimensional data, and includes photographs of many of the items. For the first time, comprehensive information about these important collections is readily accessible to other researchers.

In his study of the Gambell archaeological sites, Collins identified several aspects of the artifact assemblages (decoration on ivory artifacts, methods of making pottery vessels and lamps, and the relative frequencies of chipped and ground stone tools) that he thought had changed over time. Dumond ratifies and refines Collins' observations, and shows that those attributes, as well as harpoon head styles, can be used to establish a relative chronology for the individual houses at the Hillside site. Anchoring that sequence in calendar years, however, posed major difficulties. Dumond discusses problems with radiocarbon dates reported in previous studies, and explains why they should be disqualified. He was fortunate to find in the Collins/Chambers collection plant remains from two of the Hillside houses, which he submitted for dating using state-of-the-art techniques. The resulting dates correlate closely with recent radiocarbon evidence obtained independently on ivory artifacts from the Hillside site, but only if the ivory dates are adjusted to account for the marine reservoir effect (the error in radiocarbon age of specimens that incorporate carbon from the ocean). Close reading is required in this section of the monograph to follow Dumond's investigative line of reasoning, but I was persuaded by his argument that the Hillside houses had been occupied over a time span between A.D. 150 and 400, after which people moved out onto the newly emerging beach.

To show how Old Bering Sea culture fits within a broader cultural-historical context, Dumond summarizes archaeological and linguistic evidence from both the Asiatic and American shores. Some archaeologists maintain that prehistorians should not rely on evidence from linguistics, arguing that language cannot be excavated. Those who have followed Dumond's work over the years will be aware of his long-standing insistence that a cultural-historical framework for the Arctic should account for the distribution of the major language groups of the Eskimo-Aleut language family. He sees in the archaeological data evidence of three "ancestral streams of influence" (p. 124) that shaped the Old Bering Sea culture. One of the streams originated in the south, where Aleut culture developed over a long period of time. A second stream emanated from Asia, the closest landmass to Gambell, where current archaeological thinking places the homeland of the Old Bering Sea culture. The third stream was from mainland Alaska, where a mixed inland-coastal hunting pattern developed from the Arctic Small Tool tradition. As a general explanatory framework, Dumond's scheme has a great deal of merit. This framework does not explain precisely the origins of the Old Bering Sea culture or its

exact role in the later development of Eskimo cultures. This is not a criticism. The issue of cultural origins must always be elusive, given the many permutations in the ways that cultures grow and change. Dumond's analysis of cultural interactions seems to me to be the best approach for interpreting human history in the Bering Sea region.

This monograph is not for the casual reader who wishes to be transported back in time to experience, if only vicariously, life in earlier time periods. It is, however, an important scholarly work that should be read by serious students of Arctic archaeology. Those readers will also be interested in excerpts from correspondence and published materials that give insights into the debate between Collins and others in the nascent days of Arctic archaeology, as they pieced together archaeological information and developed theories about the origin and development of Eskimo cultures.

On another note, *The Hillside Site, St. Lawrence, Alaska—An examination of collections from the 1930s*, is an excellent example of collection-based research. Archaeologists whose research interests lie in the North are now facing escalating costs for conducting field work in remote areas, declining levels of research funding, and difficulties in obtaining permission to undertake excavations because of changing political environments. Dumond's study is a timely reminder that museums contain collections that have enormous potential to continue to inform us about the past. As he ably demonstrates, many museum collections warrant further study, by researchers who bring with them new questions as well as new paradigms and analytical techniques for peering into the past.

REFERENCE

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Charles D. Arnold
Director
Prince of Wales Northern Heritage Centre
Box 1320, Yellowknife, Northwest Territories
X1A 2L9

SACRED ECOLOGY, TRADITIONAL ECOLOGICAL KNOWLEDGE AND RESOURCE MANAGEMENT.

By FIKRET BERKES. Philadelphia: Taylor & Francis, 1999. xvi + 209 p., maps, illustrations, index, references. Softbound. US\$24.95.

Awareness of traditional ecological knowledge has become so widespread in the last ten years that the phrase (or its acronym, TEK) is now the standard descriptor of this often ill-defined and sometimes controversial subject. Although there is now a substantial literature on TEK,

Sacred Ecology is the most comprehensive and authoritative book on the subject to date. It is an engaging survey of the field, the quality of editing and production are high, and I detected only one error (on p. 138, sea urchin density is given per square mile, when it should presumably be per square metre). I would recommend this book highly, both as a course text and to the general reader. Yet so rapidly has the field of TEK grown that a book of this size and scope is, in fact, quite general. Many topics receive only cursory attention. For example, much TEK literature from northern Canada and Alaska, including most of what has appeared in *Arctic* in recent years, is absent from the 17-page list of references.

The book is organized in three parts: concepts, practice, and issues. In the first, Berkes defines TEK and compares it to "Western science." He explains the intellectual roots of the study of TEK, relating it to other emerging fields of environmental ethics, common property, and environmental history, all in turn rooted in ethnohistory and human ecology. Berkes shows the uses of TEK for a variety of environmental management purposes, such as resource management, conservation of biodiversity and protected areas, environmental assessment, and ecological research. The book's strength and focus is resource management, reflecting the author's own experience and expertise. The discussion of the use of TEK in environmental assessment (p. 32–33) is, in contrast, disappointing, especially as it does not address the role and utility of TEK in the prediction of effects.

In the second part, on practice, Berkes draws upon his long and fruitful research career (he began as a marine scientist and became a social scientist) on the resource harvesting and management practices of the James Bay Cree. He draws together his findings to illustrate key themes, one of which is the similarity between TEK and adaptive management. This section is enhanced by concise vignettes from Berkes' shorter research stints in diverse places and circumstances.

The third part, on issues, considers how local knowledge develops in contemporary circumstances, drawing on several case studies from the West Indies. These case studies also reinforce the parallel that Berkes draws between TEK and adaptive management, a particularly strong point of the book. In the final two chapters, the author addresses many questions that have been raised about the legitimacy and use of TEK; examines the challenge that indigenous knowledge poses to the "positivist-reductionist paradigm" that, he asserts, has dominated conventional resource management; and outlines the benefits of TEK for resource conservation and management. In so doing, he grounds TEK clearly in its institutional context (often one of common property arrangements) and suggests that periodic resource crises are not necessarily a sign of the failure of TEK, but can be the occasion for institutional renewal and learning.

Too many commentaries on TEK create the impression that science is the problem, and TEK is the solution.