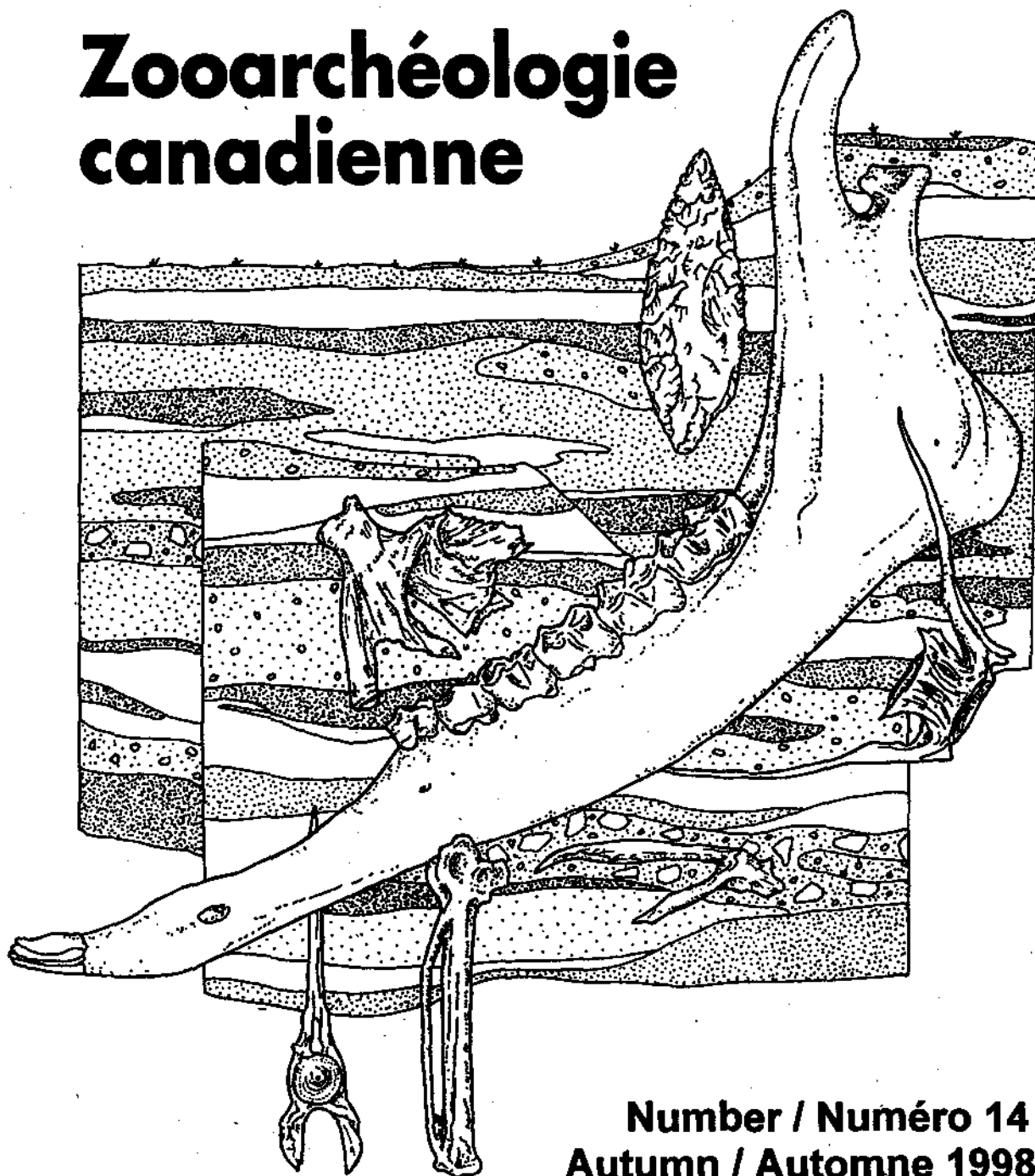


Canadian Zooarchaeology

Zoarchéologie canadienne



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EDITOR'S NOTE/NOTE DE L'ÉDITEUR

You will notice that this issue focusses on the ICAZ conference, held in August in Victoria. I was asked to review zooarchaeology in Canada for a symposium on international zooarchaeology, and I have reprinted this paper as much of the data will be of interest to Canadian zooarchaeologists. We also include a review of the conference by Suzanne Needs-Howarth.

I would like to include a survey of the osteological collections in Canada in an upcoming issue, so will be sending out a questionnaire (short!) for people to fill in.

A good autumn to all, and especially to those in a new academic year. My thanks to Donna Naughton for her assistance in putting this issue together.

Kathlyn Stewart, Editor

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Dissertation Abstract

by Maribeth S. Murray

*1996. Economic Change in the
Palaeoeskimo Prehistory of
the Foxe Basin, NWT.*

Ph.D. dissertation, Department of
Anthropology, McMaster University.

This dissertation is a study of economic change in the Palaeoeskimo period (3200 BP to 1000 BP) at Igloolik Island, in the Foxe Basin, eastern Canadian Arctic. Evidence derived from the analysis of settlement, zooarchaeological and artefactual data was used to infer changes in subsistence and socio-economic organisation between PreDorset (ca 3200 BP) and Dorset (2400-1000 BP).

The primary economic unit during PreDorset was probably the nuclear family and at Igloolik the major subsistence activity was ringed seal hunting. PreDorset settlement was short-term and people appear to have been highly mobile, moving away from Igloolik to exploit other resources on a seasonal basis. In contrast, Dorset groups were less mobile, spent a greater proportion of the year at Igloolik, exploited a wider range of resources, and intensively hunted walrus. The beginning of the Dorset period was characterised by

the development of new technology, communal walrus hunting, storage practices and the appearance of larger economic and social units. The subsistence base continued to widen into the Late Dorset period, with greater use of terrestrial species such as caribou and arctic fox, however walrus remained important throughout.

The development of communal walrus hunting, storage, and widening of the subsistence base combined to produce relative subsistence security in Dorset as compared to PreDorset. This relative security seems to have been partly expressed in the elaboration of material culture, in particular walrus hunting harpoon heads. It further appears to have resulted in socio-economic differentiation between Dorset groups in the Foxe Basin and those in the comparatively resource-poor regions of the central and high Arctic.



✿+★☆*✿◆◇*

Dissertation Abstract

by K. Peach

Faunal Exploitation at the Forks: 3000 B.P. to 1860 A.D.

The basic aim of the thesis is to examine faunal exploitation patterns at the Forks over a three thousand year period. This broad time span is conventionally subdivided into the Archaic (Middle Precontact), Middle and Late Woodland (Late Precontact), and Postcontact periods, which are identified through archaeologically visible changes in lithic and ceramic technology. These changes in technology and culture period should be mirrored by changes in subsistence patterns, observable within the archaeological faunal assemblages.

The thesis will : 1) provide the first synthesis of faunal data from over ten years of archaeology at the Forks; 2) provide additional data on changing subsistence patterns, both Precontact and Postcontact; 3) expand the understanding of these subsistence patterns through the incorporation of social data as gleaned from both ethnographic and archival data; and, 4) clarify the relationship between technological change and the faunal subsistence subsystem.

Five faunal samples have been selected to provide the archaeological database. These samples have been collected by the Forks Public Archaeological Association, Parks Canada, and the University of Manitoba. Each sample represents a

cultural period: Archaic, Late Woodland (Blackduck), and Fur Trade (Northwest Company and Hudson's Bay Company).

These faunal samples will first be quantified, in order to examine changes in taxonomic frequencies. Seasonality of procurement will be determined for each taxonomic class through examination of epiphyseal fusion and tooth eruption sequences (for mammals), presence/absence data and presence of medullary bone (for birds), and analysis of incremental growth structures (for fish). Site catchment will be reconstructed through ethological and archival data. Examination of cut marks, breakage patterns, and relative element and body part frequencies will provide information regarding the butchering and processing of the fauna.

A second database drawn from archival and ethnographic sources in order to provide more complete interpretations and explanations of the observed changes in exploitation patterns. These archival sources include fur trade journals, settlement period journals, the Nor'-Wester newspaper, and Hudson's Bay Company District Reports.

This research will expand our knowledge of the relationship between culture and environment over a broad span of time. It will also provide additional information regarding each of the cultures under consideration, as well as the changes and developments from one archaeological period to another. Working from one locality provides the opportunity to hold environment constant, while focusing upon the cultures themselves

and their interactions with each other and their environment. The completion of the thesis will also provide useful information for future research, including detailed subsistence data for each culture period, a faunal database covering 3000 years, and the testing of faunal analytical techniques seldom applied to Manitoba assemblages. The study of incremental growth structures of two fish species (*Ictalurus punctatus* and *Aplodinotus grunniens*) will also produce the beginnings of a seasonality database of local fish species.

(Editor's Note: Congratulations to Kate! This is an abstract of her thesis research proposal which was granted a C. Thomas Shay Scholarship.)

C. Thomas Shay Scholarship

On the occasion of his retirement, colleagues, friends and students of Tom Shay established a scholarship in his honour, to be awarded annually to anthropology graduate students at the University of Manitoba.

The scholarship is open to full-time graduate students in Anthropology pursuing thesis research for their M.A. or Ph.D. degrees. Their research is to be carried out within (or at least relevant to) the prairie and boreal forest regions of Manitoba and surrounding provinces and states.

Although preference will be given to students wishing to undertake research in archaeology, the award is also open to students in physical and cultural anthropology. Selection is based not only on previous academic achievement, but also on the candidate's research proposal as well as their overall contribution to Anthropology, such as publications and volunteer work.



Zooarchaeology in Canada: *A Brief History and Perspectives for the Future*

by Kathlyn Stewart

Canadian Museum of Nature, P O Box
3443, Stn D, Ottawa, K1P 6P4, Canada

This paper was presented in a slightly abridged form at the ICAZ conference in Victoria in August 1998. I have reprinted it here because I believe it will be of interest to zooarchaeologists working in Canada. *I would appreciate hearing any comments, suggestions or corrections.* I would like to acknowledge some of the authors whom I have drawn on for this paper, including Evelyne Cossette, Christy Darwent, Jon Driver, Brent Murphy and David Black, Frances Stewart, and Ernest Walker, all of whom published articles on regional zooarchaeology in Canada in previous issues of *Canadian Zooarchaeology*. A longer version of this paper with some statistical analysis of trends will appear in a future edited volume.

Nineteenth and early twentieth century roots

Zooarchaeology in Canada has been shaped by the diverse geography and faunas across the country, and its relatively short archaeological time depth compared to the Old World,

with human populations coming into Canada from Asia at some time in the Late Pleistocene. Canada's northern location means that its fauna and prehistoric peoples were more cold-adapted than most populations globally. Canada has the greatest length of maritime borders of any country, resulting in a focus by many of its prehistoric peoples on sea mammals, birds, fish and invertebrates in their subsistence strategies. Inland peoples procured a large size range of animals for subsistence, but also fur- and hide-bearing animals for clothes and shelter, particularly in the cold Canadian winters.

Historically in Canada, recorded interest in fossil bones and artifacts began with European curiosity about the earlier cultures of the country. Many of the European visitors, particularly of the Jesuit Missions, in the 16th, 17th and 18th centuries AD kept journals, diaries or other written records of the activities of local peoples, including subsistence and eating practices (eg., Biggar 1922-1936; Jewitt 1975, Sagard 1866, Trigger 1976; Waugh 1916). These are invaluable sources of information for aid in reconstructing diet and subsistence, as well as for zoological records of animal distributions at the time.

In the early to mid 1800's, with growing populations and clearing for new settlements, archaeological sites became increasingly exposed and interest mounted in their contents. Antiquarianism, or private collecting

of artifacts for their own intrinsic value was widespread. In particular the bison kill sites in the Prairies, shell middens on the west and east coasts and the burial sites in Ontario and Quebec were of interest (Noble 1972).

Not until the mid 19th century did several scientifically trained people begin to systematically collect and record archaeological material with a view to reconstructing past lifeways. Two publications founded in 1852 provided venues for archaeological, zoological, paleontological and geological reports and notes, one called the "Canadian Journal" and the other the "Canadian Naturalist and Geologist". At the same time, the British-trained scientist Sir Daniel Wilson brought more advanced methods and theory to Canadian archaeology, and in 1856 published in the Canadian Journal a reprint of a British paper entitled "Value of natural history to the archaeologist" - perhaps the first zooarchaeological article published in the Canadian provinces (Wilson 1856).

In the last 3 to 4 decades of the 19th century, local naturalist, historical and scientific societies sprang up across the country, including the Royal Canadian Institute, and the Canadian Naturalist and Geologist Societies. More interest was taken in faunal remains so that they were reported on in journals, however briefly. Examples include the publications by Ambrose (1864) and Jones (1864) in the 1860's describing the mainly invertebrate

remains from shell mounds in Nova Scotia.

The first purely faunal report was published in Canada in 1902 by Dr W Brodie, and dealt with faunal remains from several prehistoric sites in southern Ontario. It emphasised a more scientific approach, naming animals by genus and species, and listing the fauna in systematic order (in Stewart 1993).

It is important to mention the value of museums, both national and provincial at this time in aiding zooarchaeological studies. The first museum in Canada was opened in 1842 in Saint John, New Brunswick, which housed Micmac artifacts and ethnographic materials, as well as natural history objects. In 1852 the collections of the Canadian Institute were incorporated into the collections of the Ontario Provincial Museum, now the Royal Ontario Museum in Toronto. The National Museums of Canada formed within the Geological Society in 1842. The earliest western museum was the Provincial Museum in Victoria, which opened in 1887.

The first approximately 40 years of the 20th century saw an increase in detailed, scientifically-based faunal reports across Canada, in all regions. This was in large part due to the work and influence of two men - William Wintemberg and Harlan Smith. Wintemberg (e.g., 1919; see refs in Noble 1972) was mapping sites in southern Ontario and Quebec and also describing both the artifacts, particularly of bone, and the faunal remains, often in great detail. Smith also excavated sites in

Ontario, but was primarily known for his work in the development of British Columbia archaeology (e.g., Smith 1899, 1909). Both Wintemberg and Smith also conducted the first professional excavations in the Maritimes, at the shell middens in Nova Scotia (Smith and Wintemberg 1929).

Both Wintemberg and Smith gave considerable attention to subsistence patterns, and utilised several historic and ethnographic works, in particular Waugh's book on Iroquois Foods and Food Preparation (1916) in their interpretation of subsistence. Both also realised the importance of bone modifications, and Smith discussed the domestication of dogs, based on the gnaw marks on bone excavated in Nova Scotia (Smith and Wintemberg 1929). They also emphasised the zoological value of archaeological animal remains, and in 1919 Wintemberg published "Archaeology as an aid to zoology".

From about 1940 to 1960, studies on faunal remains and subsistence lagged behind other advances in archaeology in Canada, apparently due to a lack of comparative collections as well as a lack of trained scientists. As a sign of this period, in 1960 John Erskine, of the Nova Scotia Institute of Science, stated that he could not find a Canadian zoologist with a comparative osteological collection to identify faunal remains (in Murphy and Black 1996). With the increasing numbers of excavated sites in Canada and the increasing importance being

given to animal remains, there was clearly a need for good comparative osteological collections, and specialists who could identify fossil bones.

Zooarchaeology in Canada since the 1960's

Until the 1960's archaeologists in Canada were mainly building regional culture histories through mapping and excavating sites, and collecting and reporting changes in artifacts and sometimes fauna through time. However, the disciplines of Anthropology and Archaeology underwent radical changes in the 1960's and 1970's (e.g., Trigger 1989), and this also affected the discipline of zooarchaeology. The processual archaeology of this period emphasised the interaction of the environment, subsistence and behaviour, and created a need for more and detailed studies of animal remains from archaeological sites. The concomitant need for comparative osteological collections, and for osteological specialists was answered in the 1950's, 1960's and later in the United States by a group of researchers who became in fact the first full-time zooarchaeologists in North America – these being Paul Parmalee, John Guilday and Stanley Olsen. The methodologies and standards these men used were the models used by later generations in both Canada and the US.

The impact of processual archaeology resulted in considerable change in the practice of zooarchaeology in Canada, with each region responding differently to the

new perspectives. I will discuss the 6 regions from west to east to north, in greater detail.

In British Columbia, until the 1960's, archaeologists were primarily documenting the rich cultural history of the coastal and interior groups. Archaeology flourished with considerable excavating, and as a result numerous regional sequences were developed both along the coast by workers including Charles Borden (e.g., 1950, 1951), George MacDonald (1969), Don Mitchell (e.g., 1968), and Roy Carlson (1960) and inland, by David Sanger (e.g., 1967).

The association of bones with coastal shell middens ensured excellent bone preservation, so that abundant faunal remains were recovered, but recovery was often unsystematic, or else reported without quantification. Workers in the 1960's who did focus on recovery and reporting of faunal material were Gay Frederick (Calvert 1968), Frances Stewart (e.g., 1977), and J. May (1979) on Prince Rupert Harbour area faunal material.

In the 1970's and 1980's *in tandem* with the changes in archaeological theory, many BC archaeologists and anthropologists began examining in greater detail the interactions between the rich coastal cultural base and the abundant and diverse subsistence resources. Similarly the development of the interior sites were linked to the rich resources available, including salmon. From the 1970's on, therefore, considerable attention was paid to

recovering and analysing faunal remains.

In the late 1980's and through the 1990's there has been more of a trend in BC to regional studies, in able to compare cultural and subsistence trends. Studies comparing subsistence trends in the Prince Rupert-Queen Charlotte Island area by Frances Stewart and myself (1996), and in the southern coastal area of BC by Diane Hanson (1991, 1995) in particular are in progress in an attempt to discern subsistence trends beyond the local site level. In the interior of BC, studies by Kuijt (1989) and Langemann (in Driver 1995) have looked at inter-site variability, including animal resources. Recently, more synthetic, less site-specific articles have been published, including Aubrey Cannon's (1995) discussion on ratfish utilisation, and my own discussion of screen mesh size in recovery of remains, particularly fish, on the coast (Stewart 1996).

Unique zooarchaeological problems are associated with BC coastal sites, primarily due to the enormous taxonomic diversity and size range in the fauna. Poor retrieval of microfauna (especially fish and birds) because of utilisation of large screen mesh is an ongoing problem, requiring a balance between total data recovery and time constraints (Stewart 1996). Further, because of the huge diversity in taxa, it is imperative to use comprehensive comparative collections, as well as standardised methods of excavation, analysis and reporting. To my

knowledge, there are only 2 comprehensive collections of Northwest coast faunas in Canada - at the University of Victoria and the Canadian Museum of Nature in Ottawa.

On the Prairies, zooarchaeological research has focused on the southern regions of Alberta, Saskatchewan and Manitoba, in particular the bison kill sites and the stratified habitation sites. Early excavations focussed on lithics and pottery, often providing only the scantest of details on the often massive amount of bones recovered. This was in part due to a lack of scientists to analyse the faunal material; bones excavated prior to the 1970's needed to be sent outside Canada for analysis (in Walker 1997). The methodologies developed by Plains archaeologists in the United States in the 1960's and 1970's, including bison population studies and seasonality determination, were utilised in Canadian Prairie sites in the 1970's and later. Numerous excavations and analysis using these techniques were conducted in the three Prairie provinces during this time, by researchers including Michael Wilson (e.g, Davis and Wilson 1978) and Ernest Walker (in Walker 1997).

In the 1980's and 1990's techniques unique to the bison kill sites have been developed and employed in many Prairie sites. More standardised measures of quantification of bison bones, detailed taphonomic data, detailed descriptions of butchering practices

and preparation practices have been incorporated into site interpretation. An example of utilisation of these methodologies is found at Head-Smashed-In Buffalo Jump located in Alberta. This site was excavated meticulously throughout the 1980's under Jack Brink and was opened as a World Heritage Site in 1987.

Problem areas in zooarchaeological work on the Prairies as articulated by Ernie Walker (1997) include the lack of adequate comparative faunal collections. Another problem is lack of consistent recovery of microfauna to reconstruct paleoenvironment and ecology. Recent work by zooarchaeologists such as Richard Morlan (e.g., 1994) have emphasised the importance of reconstruction of paleoenvironment, particularly using rodent bones. Water screening and use of small screen sizes is now more common in Prairie sites.

As with the other provinces, Ontario archaeologists were primarily building culture histories through local archaeological sequences until the 1960's. Sometimes fauna was included in the reports, but often not. However two monographs by Americans Charles Cleland (1966) and William Ritchie (1965) were published in the 1960's, on Great Lakes and New York archaeology, which became the standard for later research in southern Ontario archaeology. Both monographs put great emphasis on faunal remains, diet and subsistence, and framed their discussions around these data.

In 1966 the first fulltime zooarchaeologist, Howard Savage, was hired at a Canadian university, in the Dept of Anthropology at the University of Toronto (in Stewart 1993). Dr Savage's hiring reflected the new importance of zooarchaeology to Canadian archaeologists. Over the next 30 years, Dr Savage built a large comparative osteological collection, and taught zooarchaeology to undergraduate and graduate students, and many of the current zooarchaeologists in the country were first trained by him.

The importance of zooarchaeology in Canada was also reflected in the creation of the Zooarchaeological Identification Centre (aka ZIC), started in Ottawa in 1974 at what is now the Canadian Museum of Nature by Anne Rick, and a collection also started by Frances Stewart at what is now the Canadian Museum of Civilisation. Between the workers at ZIC and Dr Savage's U of Toronto students, many of the faunal assemblages in Ontario were analysed between the 1970's and 1990's, and emphasised the importance of faunal remains in archaeological sites.

While numerous reports on site-specific faunal remains have been published, as well as interpretations of diet and subsistence, Ontario archaeology does not have good synthetic regional coverage. Archaeologists have focused on local area sequences, and few regional syntheses have been published. Similarly few regional trends in zooarchaeological data have been

published, something which is needed in future.

In Québec in the first half of the century, archaeologists primarily from the National Museum in Ottawa conducted excavations, and built local sequences. In 1965, a group of students from the University of Montréal founded the Society for Prehistoric Archaeology, with the goal of employing modern, professional methods in Québec (in Cossette 1993). Following from this, the role of zooarchaeology achieved new significance among Québec archaeologists. In 1975 two veterinarians from the University of Montréal began assembling a comparative osteological collection, and to undertake zooarchaeological analysis, using modern methods (in Cossette 1993).

With rapidly increasing numbers of excavated sites and faunal remains, it was clear that a better zooarchaeological facility was needed. In 1982, the Ostéothèque de Montréal was started at McGill university, but was moved to the University of Québec at Montréal in 1983.

Many of the zooarchaeological reports from Québec are contract and therefore unpublished. However recently students are doing graduate zooarchaeological theses on Québec sites, most notably Evelyne Cossette's recent PhD entitled "Assemblages zooarchéologiques et stratégies de subsistance des groupes de chasseurs-pêcheurs du site Hector Trudel (Québec) entre 500 et 1000 de notre ère" (Cossette 1995).

In the Maritimes and Newfoundland, the early part of the century saw intensive excavation and survey by archaeologists including Wintemberg and Harlan Smith (1929). In the 1950's, John Erskine was prominent, recording and excavating sites in Nova Scotia, New Brunswick and Prince Edward Island. He also assembled his own comparative osteological collection.

Throughout the 1960's, 70's and 80's, zooarchaeological research in the Maritimes surged ahead of the rest of Canada. Modern methods of analysis were used as early as 1963 by C.S. Churcher who analysed mammal remains from New Brunswick sites and inferred a marked change in native diets over time (in Murphy and Black 1996). A long term archaeological project in the Passamaquoddy Bay area, New Brunswick, led by David Sanger (e.g., Sanger 1987) utilised well-trained zooarchaeologists Howard Savage and Frances Stewart to identify and report on faunal material. Other archaeological projects in the Maritimes and Newfoundland focused on reconstruction of diet, subsistence and seasonality from the faunal remains. Considerable work has been conducted on Beothuk subsistence in Newfoundland, and is summarised in an article by Peter Rowley-Conway (1990). Recently work has focused on documenting ranges of species, including extirpations and extinctions, as well as incorporating new physicochemical methods of analysis to aid in identification.

In the North, there is also a long history of zooarchaeological research. In the 1920's Therkel Mathiassen, a Dane, analysed the faunal remains from the Fifth Thule Expedition. He recorded excavated bones and interpreted the whaling economy that is associated with the Thule. In the four decades following Mathiassen, several archaeologists recovered and identified faunal remains, but usually reported them only as lists, without interpretation (in Darwent 1994).

The 1970's and 1980's saw considerable excavation and more detailed reporting of faunal remains from a variety of sites in the North (e.g., McCullough 1989). Because of the unique and generally excellent preservation of bone, a variety of techniques were developed to aid in analysis of the bone remains. Sectioning of seal teeth was undertaken, to assess age at death of the individuals. This was primarily undertaken by Sterling Presley of the Archaeological Survey of Canada. Weathering stages were used on Devon Island to assess rates of bone loss (in Darwent 1994). Butchering marks, chew marks and bone fracture patterns have also been used extensively to determine procurement and preparation practices.

In the 1990s' numerous projects continued in the North, with considerable emphasis on faunal remains. Interpretation of the remains emphasises taphonomy, site formation, and cultural processes as well as the more traditional recording and quantification of remains.

While bone preservation in the Arctic is generally better than regions further south, one problem unique to Arctic zooarchaeology is the high costs of shipping bones, particularly of larger bones such as polar bears and sea mammals, south to be analysed in greater detail. Such bones are often left in the field after brief analysis.

Past and Future Significance of Zooarchaeology in Canada

What is the state of zooarchaeology in Canada now and in the future? One clear trend is the change from the 1960's and 70's, when zooarchaeological analysis was primarily conducted by university- and museum-based practitioners, to the 1980's and 90's where private consultants are increasingly contracting to do this analysis. This may reflect the overall societal trend of greater emphasis on private enterprise and a decrease in funding to university and museum researchers. One result is the large numbers of unpublished reports, with fewer published papers and regional syntheses.

Balanced against this is the increase in numbers of Canadian universities teaching undergraduate and graduate courses in zooarchaeology, and the concomitant increase in zooarchaeological practitioners across the country. As editor of the newsletter *Canadian Zooarchaeology*, I have seen an increase in subscriptions in the past 7 years, as well as much better regional coverage across the country.

One gap I see is the lack of publishing venues for Canadian, and indeed all zooarchaeologists. While Canada has had its own zooarchaeological venue since 1992 – *Canadian Zooarchaeology* which is edited by myself at the Canadian Museum of Nature, it is primarily a newsletter which publishes short articles and listings, but not longer papers. More synthetic zooarchaeological articles ARE published in *the Canadian Journal of Archaeology*, *Arctic or Canadian Journal of Earth Science*, and also in provincial newsletters and journals. However, these articles are often only published if they are incorporated into a broader theme or site report.

Other than the international journal *Archaeozoologia*, there are no regular english language venues which specialise in publishing papers with a zooarchaeological focus. The result is that a large quantity of valuable zooarchaeological data is languishing in unpublished reports, in unpublished conference papers, and in people's minds.

These issues need to be addressed in future.

Acknowledgements

My thanks to Lynn Snyder and Elizabeth Moore for asking me to present this paper at their symposium on international zooarchaeology. My thanks also to Fran Stewart for discussions on this topic, and to the

other authors who have contributed papers on regional Canadian zooarchaeology.

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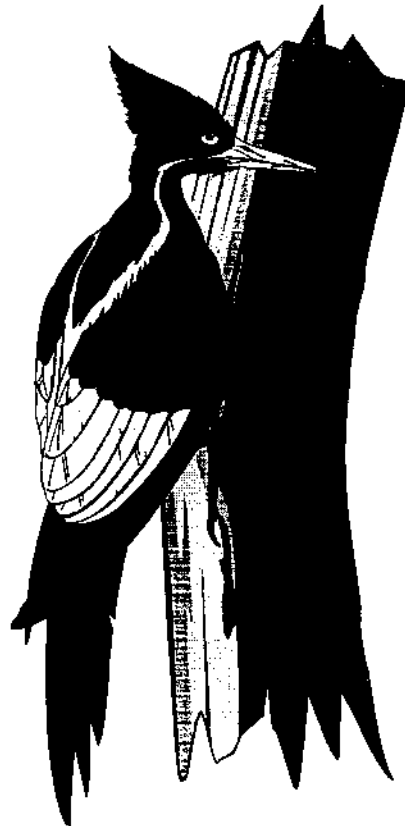
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An overview of the 8th International Congress of the International Council for Archaeozoology

by Suzanne Needs-Howarth

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The conference of the International Council for Archaeozoology is held every four years. The 1998 conference, organised by Becky Wigen, Susan Crockford, Sharon Keen, Jon Driver and Quentin Mackie, was held August 23-29 at the University of Victoria. With 202 delegates, this conference was the second largest in the history of ICAZ. A total of over 200 papers were presented by people from all over the world, dealing with a wide range of topics.

The main ICAZ conference was preceded by the Bird Working Group meeting, which I did not attend. Becky Wigen tells me that 11 papers and 3 posters were presented. Fifteen people attended. The next meeting is proposed to be in Krakow, Poland, hosted by Zbigniew Bochenski. The dates will be confirmed later.

A symposium on the first day of the main ICAZ conference, which I also did not attend, was devoted entirely to dogs, and included papers on genetics and breed development, osteometrics, and pathologies. Symposium organiser Susan

Crockford is having it published through BAR.

The remaining days were filled with four concurrent sessions, including several additional tightly focussed symposia. Several of these symposia are being published through *Archaeozoologia* and other monograph series.

Below I briefly touch on some papers that I found especially interesting.

The session on the history of zooarchaeology included a stimulating discussion on the current state of zooarchaeology in the U.K., in particular the increasing commercialisation of the discipline (Umberto Albarella, Birmingham University and Keith Dobney, Environmental Archaeology Unit, York University), and a thorough overview of Canadian regional zooarchaeology by CZ's editor, Kathy Stewart.

Sebastian Payne (Ancient Monuments Laboratory, English Heritage) managed to both scare and amuse us with a paper on recovery. None of the floatation and wet sieving systems he evaluated achieved 100% recovery of plant and animal remains in various experimental samples. The causes of error are, predictably, the human sorters, and not so predictably, the machines themselves. For example, one did not retrieve a single one of the herring vertebrae included in the experimental soil samples.

Contamination from the floatation unit or the drying venue was found to be common, also in the experimental samples sent to several commercial firms.

A session on taphonomy included a paper by James Barrett (University of Toronto), in which he evaluated several methods commonly used to identify taphonomic attrition. These methods differ in the degree to which they satisfy three important criteria: to produce replicable results that are amenable to statistical analysis and are unambiguous in meaning.

Applying a method used on European deer, Christian Davenport (University of Tennessee) investigated the relationship of several dimensions of atlas to live weight in white-tailed deer, which in turn allows for accurate determination of sex upwards of 70% of the time. These data can then be used to infer game selection and status.

Another paper on deer demonstrated that meat and marrow utility indexes and bone marrow fat percentages of white-tailed deer of varying sex and age exhibit considerable variation within one population, some of which relates to the depletion of marrow fat in lactating females (Jodi Jacobson and Walter Klippel, Department of Anthropology, University of Tennessee). This is a caution against indiscriminant use of wildlife data.

In the symposium on seasonality, Pat Lubinski (University of Wisconsin, Madison) talked about problems surrounding the ageing pronghorn antelope. He got good results comparing coarse age categories to modern age distributions, based on live censuses, hunter check station counts and data from a 1991 cliff "jump".

Ingrid Mainland (Department of Archaeology and Prehistory, University of Sheffield) presented some promising research on dental microwear in modern sheep, which allows differentiation between different kinds of grazing regimes and fodders. Since microwear is very time sensitive, this method could be used to identify season of slaughter in archaeological assemblages from Greenland.

There was a whole day of papers and discussion on oceanic middens. Foss Leach and Janet Davidson (Archaeozoology Laboratory, Museum of New Zealand Te Papa Tongarewa) presented one of several views of prehistoric overfishing. Deviating from a common expectation that overfishing results in a reduction in fish size, several sites in New Zealand with large samples of measured fish bones indicated an increase in fish size over time. It appears that fishing by the earliest Polynesian settlers targeted young fish close to shore, with 30-80% of the catches being undersized fish by modern management criteria. Once that resource became depleted, fishing moved off-shore.

Presenting on an entirely different kind of oceanic midden, Dale Serjeantson (Department of Archaeology, University of Southampton, U.K.) discussed the hunting of seabirds by early farming communities in the British Isles. In historic times predation of gannets was controlled by local chiefs and lords, which ensured that the gannet populations, though heavily exploited, were maintained at a viable level. No such control was imposed on the exploitation of auks in the eastern and western Atlantic. Because auks are flightless and lay only one egg a year, this uncontrolled human predation eventually caused them to become extinct.

In one of the few papers that focussed on freshwater fish, Charlene Keck of New Orleans talked about a Late Mississippian moated site. She found zooarchaeological support for ethnohistoric descriptions of the de Soto expedition in Arkansas that suggest that defensive moats around sites may have been accessed by the site elite for preferred species.

Keith Dobney and Mark Beech's paper on Qermes Dere in Northern Mesopotamia presented what was described in the abstract as a "perhaps somewhat eccentric idea" that early Neolithic people were experimenting with falconry (Environmental Archaeology Unit, Department of Biology, University of York, U.K.). A section of a poster by Dobney further elaborated on this point. The argument, based on taxa recovered, was well supported and didn't seem all that eccentric to me.

Also in the Middle-East symposium, Melinda Zeder of the Department of Anthropology at the Smithsonian Institution presented data on goat domestication in Iran and Iraq. She showed that previous research, which measured only fused bones, produces graphs that indicate a size decrease, and which could thus be interpreted as evidence for domestication. By measuring all longbones, Zeder demonstrated that these graphs actually illustrate the differential survival of female goats. Her individual graphs of bones that fuse at different ages indicate that males were killed by age 3-4, whereas females were kept.

Michael MacKinnon (Department of Anthropology, University of Alberta) presented data on an assemblage of 50,000 (!) bones from a late Roman villa in Southern Italy. Pigs were the most abundant mammalian taxon. Data on relative proportions and sex distributions indicate that, contrary to literary references about the popularity of wild boar hunting and the Roman penchant for suckling pig, the villa occupants kept herds of domesticated pigs in neighbouring forests in efforts to fulfill imperial tax demands. Some processing occurred at the site and some sows were driven to market.

Some interesting implications of bird remains from Bluefish caves were presented by Darlene McCuaig Balkwill (Canadian Museum of Nature) and Jacques Cinq-Mars (Canadian Museum of Civilization). Presence of shorebirds and breeding swallows suggests that the

environment in the area during full glaciation exhibited a relatively high level of productivity. This corroborates associated faunal and other archaeological evidence.

Elizabeth Wing (Florida Museum of Natural History, University of Florida, Gainesville) used an innovative approach of multiplying mean trophic level of fish by MNI and then by average weight to highlight contrasts in resource (over)exploitation on two Caribbean islands.

The most unusual paper I attended was presented by Cookie Sims, a forensic scientist with the National Fish and Wildlife Forensics Laboratory. She showed how the morphology and curvature of bear claws is used to establish MNI and, based on that, the fine for illegal bear poaching. This method has some applicability to zooarchaeology, although it is most applicable when the claw coverings are still attached.

A workshop on Monday afternoon, titled 'Issues in Recovery, Identification, Quantification and Interpretation of Vertebrate Faunal Remains' was extremely well attended. There was quite a bit of discussion on quantification, especially the use of diagnostic elements in fish, which is something I've been working on myself. I was mostly too absorbed in the discussion to take many notes. Some of the wise things people said, which I did happen to write down:

- ✓ Screening is sampling. (Lisa Nagaoka, Department of Anthropology, University of Washington, Seattle).
- ✓ If there are multiple species in a genus it is especially important to curate the bone for later checks. (Elizabeth Wing).
- ✓ How do we deal with consistency within one researcher's work? How many people have colleagues check their identifications? (Jon Driver, Department of Archaeology, Simon Fraser University).

The poster session ran for the duration of the conference, giving everyone a chance to look at all the posters at their leisure. Many of them related to the dog symposium, including one on a singing dog! I was impressed by an interdisciplinary collaboration between Virginia Butler, Department of Anthropology and Nancy Bowers, Environmental Studies and Research, at Portland State University, Oregon, that described extracting DNA from ancient salmon bone. Theirs was an excellent example of effective data presentation and layout.

There was talk of having the next ICAZ conference in the South Pacific.

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**Recent Publications / Publications
Récentes**

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- Park, R.W. 1997. Thule winter site demography in the High Arctic. *American Antiquity* 62(2):273-285.
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- Reader, D. 1996. Interior occupation: A maritime Archaic site at South brook Park, western

Newfoundland. *Canadian Journal of Archaeology* 20:123-128.

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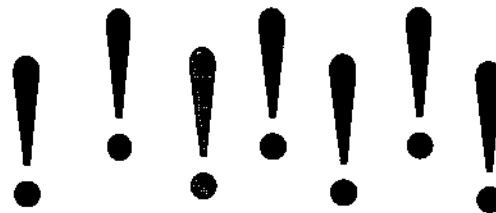
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**Forthcoming Conferences /
Conférences à Venir**

1998

**31st Annual Chacmool
Conference**

**University of Calgary, Alberta
12-15 November 1998**

contact: brginet@ucalgary.ca



1998

10th meeting of the ICAZ - Fish Remains Working Group

New York City
24 September to 2 October 1999

Meeting theme:
Approaching a New
Millenium: Fisheries Research
at Present, Questions for the
Future

Call for Papers

Please send all papers and abstracts
in by the end of April 1999.

Registration deadline is 1 February
1999. Some limited financial support
is available.

The New York portion of the meeting
(24-28 Sept.) will focus on cooperative
work, regional issues, methodology,
and the formation of workshops for a
more hands-on approach to difficult
conceptual and practical issues. The
papers and workshops are expected to
run on a 9am - 5pm schedule.
September 29th will be a group visit to
the Fulton Fish Market and the
Chinatown fish market. From the
30th of September to the 2nd of
October, a trip to Conneticut is
planned. The trip will include a stop
at the Norwalk Aquarium, walks on

salt marshes and a whale-watching
excursion. This will be accompanied
with a series of talks on marine
ecosystems, seabirds and sea
mammals.

Conference fee is \$60.00 US for the
general membership and \$40.00 US
for students.

For more information and a
registration form contact:

Foss Leach at Foss.Leach@xtra.co.nz

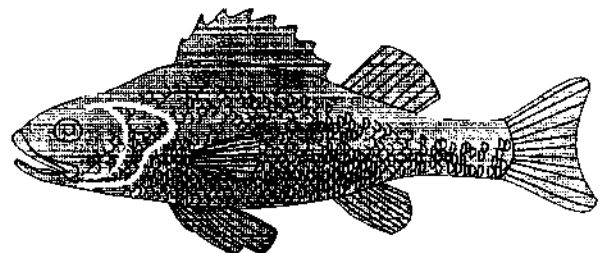
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**Requests, Exchanges, Notices /
Démarches, Echanges, Avis**

Otolith Collections

Alfonso Rojo of St. Mary's University would like to know whether there is a list of otolith collections in Eastern Canada for archaeologists' and ecologists' reference. Readers aware of such a reference should contact Dr. Rojo directly at:

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**ZOOARCHAEOLOGY IN CANADA
CALL FOR PAPERS**

Article submissions are invited for a special issue of *Ontario Archaeology* devoted to zooarchaeology in Canada, to honour the contribution of Dr. Howard Savage to the development of this discipline. Despite the Journal's title, this collection is intended to cover the full range and diversity of

zooarchaeological research across Canada. While former students and colleagues of Dr. Savage are encouraged to submit papers, this volume is not restricted to them. Within the category "zooarchaeology", subject matter is open, however submissions with original theoretical or methodological content are particularly encouraged - ideally, this volume will stand as a comprehensive survey of the "state of the art" in Canadian zooarchaeological research, and might serve as a resource for university courses in zooarchaeology and/or Canadian archaeology. Submissions will be subject to peer review, and should be prepared according to the "Guide for Standardized Manuscript Production" (*Ontario Archaeology* 57:88-100). Please send an original and three copies of manuscripts by March 1, 1999, to the guest editor at the following address: Max Friesen, Department of Anthropology, University of Toronto, 100 St. George St., Toronto, ON, M5S 3G3.

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