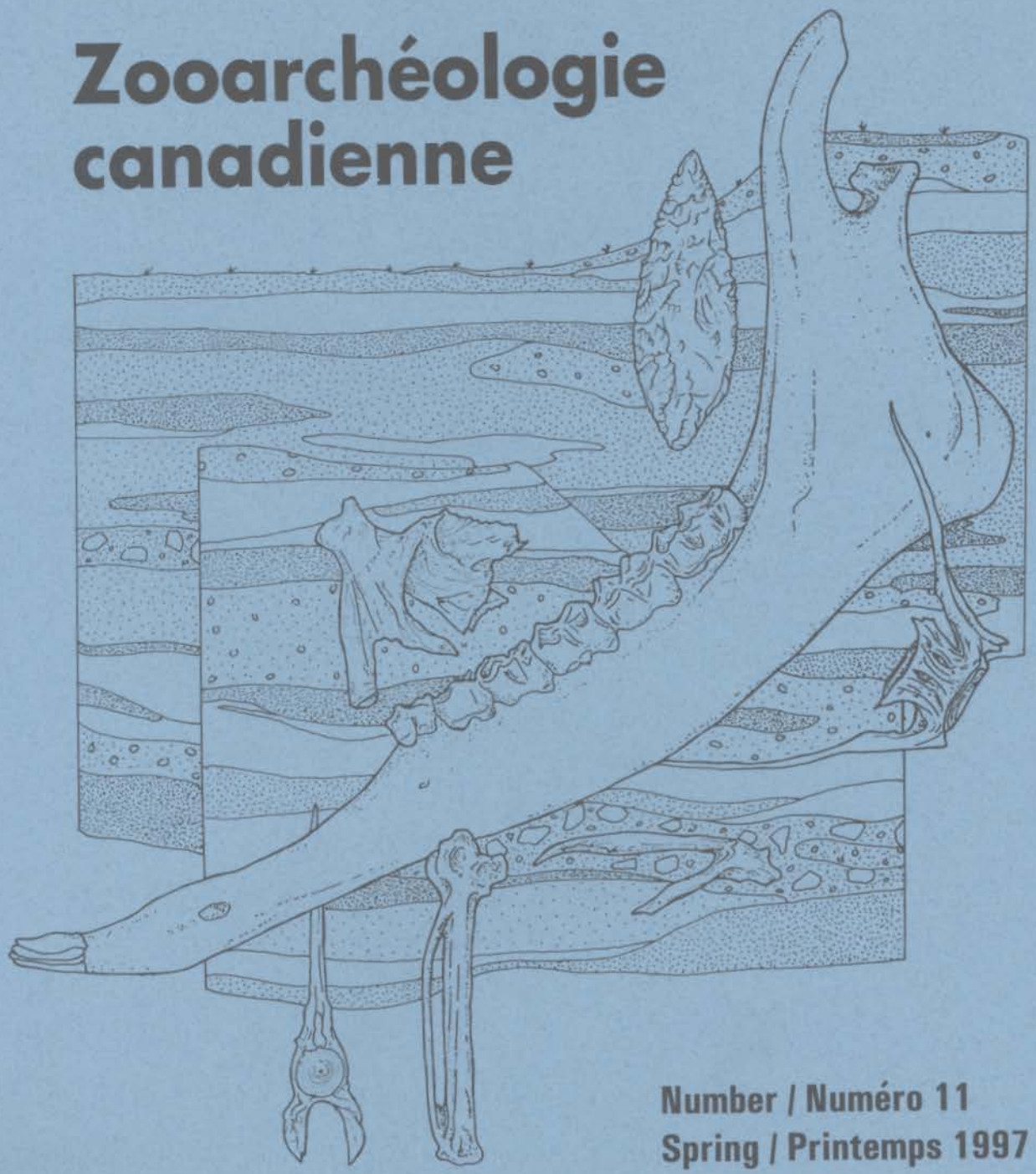
Canadian Zooarchaeology

Zooarchéologie canadienne



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EDITOR'S NOTE/NOTE DE L'EDITEUR

We start this issue out on a sad note. Dr. Howard Savage passed away on March 16, 1997, after a series of strokes. Many *Canadian Zooarchaeology* subscribers were students in Howard's Faunal Osteoarchaeology class at the University of Toronto, or knew him from his zooarchaeological work in Ontario.

I suspect that Howard's proudest achievement was the numerous students who graduated from his course, taking with them the excellent training and great enthusiasm which he instilled in everyone. Certainly he was the major force in interesting me in zooarchaeology and getting me started in it as a career. Fran Stewart and Max Friesen, long-time friends of Howard's, have written about Howard on page 2 of this issue.

Also in this issue of *CZ* are drawings of the skeleton of the yellow perch (*Perca flavescens*) with elements named, by Steve Gilbert. As well, we include the first of a regular feature on odd bones, by David Campbell and a detailed book review by Fran Stewart on "Case Studies in Environmental Archaeology". Thanks to Donna Naughton for her help with this issue.

Kathy Stewart, editor

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Cover by Debbie Yee Cannon

OBITUARY

DR. HOWARD GORDON SAVAGE:
A Consummate Zooarchaeological Preparator, Teacher and Researcher

Howard G. Savage
1913-1997

On Sunday March 16, 1997, Dr. Howard Gordon Savage died after suffering a series of strokes in Toronto. With his passing we lost a founder of zooarchaeology in Canada and the mentor for many present zooarchaeologists.

Dr. Savage was born in Oakville, Ontario on December 28, 1913 where he resided until he graduated from high school and began studying medicine at the University of Toronto (U of T). He became an M.D. in 1937 when he was only 24 years old; eight years later he received his certificate in Paediatrics from the Royal College of Physicians of Canada. For the next 30 years, he raised his two sons and a daughter, served as a medical officer with the Canadian Air Force during the war, and looked after children at Toronto's Hospital for Sick Children. In the late 1960s, his interest in bird bones led him to the Ornithology Department of the Royal Ontario Museum (ROM) and shortly thereafter to the Anthropology Department of U of T.

In 1966, Dr. J. Norman Emerson, then with the Department of Anthropology, U of T, met with Dr. Savage and soon after Dr. Savage began working on the faunal material from the MacMurchy site which Emerson had excavated in 1952. By 1969, Dr. Savage was a Research Associate at both the Ornithology Department of the ROM and the Department of Anthropology, U of T. Not long after, Dr. Savage was persuaded by students to begin teaching the faunal courses for which he and the department quickly became renowned. It is his outstanding achievements as a builder of reference collections, researcher, and teacher which will be emphasised here in our attempt to do justice to the enormous contributions and now the memory of this extremely talented, dedicated and kind man.

At both the ROM and U of T, Dr. Savage demonstrated his outstanding abilities in the careful preparation of animal skeletons and in building reference collections. The ROM's bird skeletal collection presently ranks as one of the best in the world, and many of its specimens are a result of Dr. Savage's efforts, both in accumulating carcasses and preparing them. Furthermore, his efforts fostered a cooperative spirit between the ROM and zooarchaeologists which exists to this day. Similarly, the zooarchaeological skeletal reference collection at U of T, housed in the

laboratory which fittingly bears his name, the Howard G. Savage Faunal Archaeo-Osteology Laboratory, is one of the best in the country. It includes skeletons from all zoological classes, and although North American species naturally dominate, donations from zoos, students who have left the country and international scholars impressed with Dr. Savage have resulted in animal skeletons from around the world being added to the ever-growing collection. Perhaps most importantly, Dr. Savage's requirement that students prepare skeletons as part of their course work ensured the addition of many specimens to the collection each year.

Dr. Savage was an inspiring teacher. In 1970-71, one of us (FLS) and James A. Burns were fortunate to learn from him in an apprenticeship position as his first students. Responding to requests of archaeology students, Dr. Savage began formal courses in faunal analysis in 1973 and he continued to teach until 1995. He joked that he likely would not be declared senile as long as much of the skeletal material still belonged to him but in fact his mind remained sharp until just before he died. He trained many graduate students, and one of us (TMF) profited from completing an M.A. under his direction.

Dr. Savage was not trained as a teacher and his elocution likely would not have passed the test at a teachers' college but because of his love of science and learning, which he displayed in his classes and even in conversations, every year students were turned away from his over-subscribed courses. These were very demanding courses, too. The first assignment, the preparation and labelling of a skeleton, gave students both a respect for the skeletons in the reference collection and an intimate knowledge of the vertebrate skeleton. For many of us, the first skeleton we prepared is like a template in our minds for the subsequent specimens we examine. But this first assignment not only increased the collection and taught the students much about skeletons but also unified the class members into a cohesive group. Faunal classes and work in the lab were fun!

Lectures and seminars accompanied the practical work which by second term was concentrated on the identification of a minimum of 500 previously unstudied faunal remains from an actual archaeological site. For most students this was their first encounter with "real" primary data. The results were presented in a zooarchaeological report. Thus, a data base of some 400 preliminary faunal reports accumulated in the faunal laboratory.

These were made more accessible to a wider audience by an annotated bibliography of the faunal reports on Ontario sites, prepared by Janet Cooper and Dr. Savage and published in 1994. Seldom were the students able to finish their course work by the end of the second term and yet, year after year, students from many disciplines and from other universities begged to be admitted to the classes. This was not only because of their practical aspect, incorporated into courses by Dr. Savage years before "work-study" programmes became popular in many universities, but also because of Dr. Savage's infectious enthusiasm for the study of animal remains from archaeological sites.

Dr. Savage's enquiring mind resulted in an eclectic mix of research projects and publications. Most of the material studied by Dr. Savage and his students came from sites across Canada but his reputation and work spread beyond this country too. This was evident in the range of papers presented in a full day session in his honour at the 1996 Canadian Archaeological Association (CAA) Annual Meetings. His research has been published in archaeology, medical, and zoology journals as well as in more popular venues. He has published on a wide variety of topics, including the value of faunal analysis, past animal ranges, animal bone accumulations and taphonomy exhibited in samples from modern fox dens, stress marks on bones of sled dogs, naturally deposited bones found deep in Niagara Escarpment rock fissures, experimental studies of deer hunting with stone points, and an Egyptian mummy and other human bones, hair and skin prints, in addition to producing faunal reports for at least 22 sites. He was also a co-author, with Miles Gilbert and Larry Martin, of a highly regarded avian osteology manual. In addition, he has presented many papers at conferences, including numerous CAA meetings and Ontario Archaeology Society (OAS) gatherings.

His involvement in academic organisations extended beyond presenting papers. He was a strong supporter of the CAA and particularly of the OAS of which he was an Honourary Life Member. In 1972, 1973 and 1976, he was President of the OAS and he received their J. Norman Emerson Medal. For about 20 years, he was the Secretary of the Brodie Club, a natural history club which meets monthly in Toronto. Finally, from 1980 to 1993, he was Chairman of the Section of Medical Archaeology and Anthropology, Academy of Medicine, Toronto.

We in the archaeological community are not alone in recognizing this exceptionally talented, generous and influential man. In 1993, he was included in the Canadian Who's Who. Thus in addition to his family, many former students, colleagues and friends will sorely miss Dr. Howard Savage. Surely none more so than those he knowingly infected with "bone fever".

Frances L. Stewart[1] and T. Max Friesen[2]
[1]Department of Anthropology, University of New Brunswick.
[2]Department of Anthropology, University of Toronto.

[For further reading about Howard Savage and his contributions to zooarchaeology, see Frances Stewart's article in CZ Number 4 (Autumn 1993) and an obituary on Howard in Arch Notes (published by OAS).]

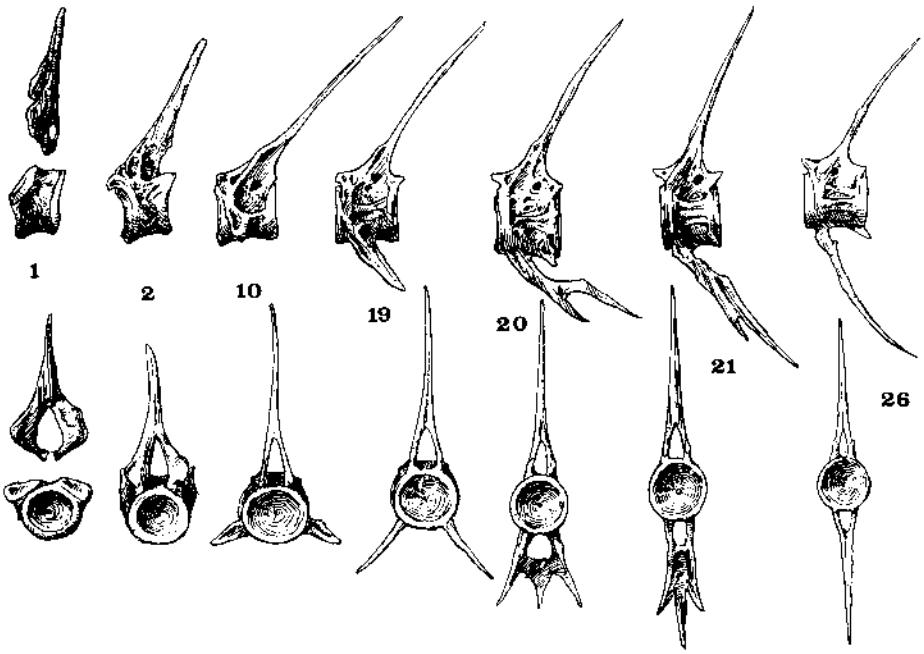
ATTENTION!!: For information on the first ICAZ meeting to be held in Canada see Conferences on page 20!!!

Drawings of Yellow Perch (*Perca flavescens)* by Steve Gilbert*

supra-occipital
hyomandibular
frontal
post-temporal
circumorbitals
supra-
cleithrum
lacrimal
nasal
operculum
premaxilla
dentary
angular
quadrate
metapterygoid
interoperculum
pre-operculum
subopercul

supra-occipital
hyomandibular
frontal
supra-
cleithrum
entopterygoid
pterygoid
cleithrum
metapterygoid
angular
quadrate
branchiostegal rays

hyomandibular
dorsal pharyngeal plate
epibranchials
basibranchials
hypobranchials
dorsal hypohyal
ventral hypohyal
ceratobranchials
ceratohyal
interhyal
epihyal
branchiostegal rays



* *These drawings were originally created by Steve Gilbert for a Laboratory Manual which has never been published. They were used by Howard Savage in his Faunal Osteoarchaeology class at the University of Toronto, but this is their first published appearance. They may be reproduced, but only by acknowledging his authorship and their appearance in* Canadian Zooarchaeology.

BOOK REVIEW

Reitz, Elizabeth J., Newsom, Lee A. and Scudder, Sylvia J. (eds.) 1996. Case Studies in Environmental Archaeology. Plenum Press, New York and London, xxi + 399 pp., ISNB 0-306-45252-9 (Hardbound), 0-306-45253-7 (Paperback).

Review by Frances L. Stewart, *Graduate Research Associate, Department of Anthropology, University of New Brunswick.*

This volume is the most recent in the series of *Interdisciplinary Contributions to Archaeology* edited by Michael Jochim, and it clearly belongs in this series. Twenty chapters, authored by 31 researchers, have been organized into six parts: Introduction, The Physical Environment and Paleoenvironments, Nutrition and Health, Subsistence Strategies, Social Complexity, and Conclusion. Patty Jo Watson wrote in her Foreword that the volume was inspired by Elizabeth S. Wing, a leading zooarchaeologist, but the immediate stimulus for the book, as stated in the Preface, was a student's questioning if "beyond taphonomy, recovery biases, and analytical biases, there was anything environmental archaeologists had learned about human conditions" (p. xiii). Finally, the back cover promotes this volume as filling a gap because similar works usually use European examples and often fail to show how environmental research can be applied to anthropological theories and questions. Thus, this collection aims to provide a general reader with *results* of environmental research in North and South America but the variety of methods employed in botanical, faunal and human skeletal analyses is also very evident. The book fulfils the editors' objectives well.

The first of the two chapters in Part I is by the editors. In it, Reitz, Newsom and Scudder review the "Issues in Environmental Archaeology" after defining environmental archaeology as a study of the dynamic relationship between humans and the ecological systems in which they live, at a site or within a region, for the ultimate purpose of developing "a fuller understanding of the ecology of human communities" (p.3). Echoing Schiffer (1976), they note that both cultural and non-cultural environments are dynamic factors in the development of archaeological sites. The body of this chapter includes brief descriptions of four subfields of environmental archaeology: earth sciences, archaeobotany, zooarchaeology, and bioarchaeology. Under earth sciences, geomorphology, sedimentology, archaeopedology and archaeometry are briefly discussed. Under archaeobotany, the types of material studied (spores, stomata, charcoal, phytoliths, wood and seeds, chemical residues, seaweeds, algae and fungi) are discussed in that order. Under zooarchaeology, the information provided by the study of "subfossil and sometimes fossil", nonhuman animal remains from archaeological sites is prominent, but there is equal space given to the less frequently studied groups such as insects and parasites. Under bioarchaeology, the authors consider dietary reconstructions through studies of stable isotopes expressed in human skeletons, health assessments through the study of pathological conditions, and behavioural reconstructions through the

analysis of arthritis and bone structure. Although these outlines are introductory only, I would have considered the common zooarchaeological materials in more detail and the rare ones less. As well, organising the botanical section into macro and microbiological materials might have been useful. These descriptions are followed by a section on the "Topics and Issues in Environmental Archaeology". Here the editors quote Odum's (1971) definition of an ecosystem and paraphrase Butzer's (1982) ideas that the biophysical environment provides a matrix for the social institutions that define a culture and that energy must be captured and distributed efficiently for a culture to prosper in its environment. These ideas are the underlying assumptions for the volume. The editors claim the diversity in environmental archaeology and the greater interaction between its practitioners today strengthen this field of study.

Chapter 2, by William H. Marquardt, "Four Discoveries: Environmental Archaeology in Southwest Florida", demonstrates how such co-operation between different specialists has improved understanding of the past in southwestern Florida. Marquardt relates how new research methods and new questions about the formation of estuaries, the relative dietary importance of shellfish and fish, the seasonality of coastal habitation, and the sea level fluctuations have changed the understanding of the inhabitation of southwest Florida. Too much of his methodological discussion reiterates of the significance of screening with small mesh sizes but the descriptions of the non-agricultural but sedentary and complex Florida cultures are interesting. I was intrigued by similarities to coastal British Columbian cultures. Thus, in Part I, the review of environmental archaeology as a field of study is followed by an example where it has been employed beneficially (Florida). This provides a solid foundation for the specific reports which comprise the remainder of the volume. In general, there is a nice balance here between simplifying the material in the text and providing extensive bibliographies where more detailed information can be found. I have summarized this introductory Part in some detail because it sets the framework for the volume. For most of the other chapters, I will mention their main highlights only. General comments on the volume as a whole will conclude this review.

Part II includes six chapters in which environments are emphasized. In Chapter 3, "Geoarchaeology and Archaeostratigraphy: View from a Northwest Coast Shell Midden", Julie K. Stein shows that post-depositional processes can alter stratigraphy within a shell midden and so affect interpretations of cultural changes. This is a very interesting chapter, but its title highlights one of the weaknesses of this volume for Canadian readers. By northwest coast, Stein means Washington State's coast. However, she does refer to sites in British Columbia, one of the very few authors to mention any Canadian sites and/or research. Chapter 4 by Sylvia Scudder, is on "Human Influence on Pedogenesis: Midden Soils on a Southwest Florida Pleistocene Island". Scudder argues that middens capping original soils protect those soils and therefore, they remain like

the natural ones. I found this argument unconvincing. Surely some particles and chemicals would be transported down into those underlying soils by gravity and precipitation? Because her examples were from the same area as that in Chapter 2, I would have interchanged this chapter with Chapter 3 for greater continuity.

Following these chapters on coastal areas are three on inland sites. Chapter 5 by Frances B. King and James E. King is on "Interdisciplinary Approaches to Environmental Reconstruction: An Example from the Ozark Highland". In it, plant research is integrated with geological and minimal zooarchaeological findings over a broad area. Many assumptions are made and so not all of the discussions are convincing but the value of General Land Office records is clearly demonstrated. Catherine S. Fowler's Chapter 6, "Historical Perspectives on Timbisha Shoshone Land Management Practices, Death Valley, California", is an ethnographic account of a hunting and gathering people. While the descriptions were interesting and I learned a new word (coppicing: to cut or thin brush) and about a new technique (coppicing willows to produce straight thin growths for basket making), this chapter seemed somewhat out of place. Except as a cautionary tale about how some activities involving plants cannot be easily reconstructed from palaeobotanical remains, it did not seem to contribute specifically to this volume. With Chapter 7, "Native Americans and the Panamanian Landscape" by Richard G. Cooke, Lynette Norr, and Dolores R. Piperno, the book returns to one of its main themes. These authors combine what at first appear to be contradictory results from different sorts of studies (plants and human stable isotopes) to explain population and cultivation changes. This is a good example of integrated research.

In the last chapter in this part, Daniel H. Sandweiss gives some general principles of malacological (molluscs) studies and then illustrates these with four case examples in "Environmental Change and Its Consequences for Human Society on the Central Andean Coast: A Malacological Perspective". This entry might have been better placed immediately after the other coastal chapters.

Part III, contains only two chapters. The first, "Biobehavioral Adaptations in the Western Great Basin", is by Clark Spencer Larsen, Robert L. Kelly, Christopher B. Ruff, Margaret J. Schoeninger, and Dale L. Hutchinson. This chapter has a very clear and concise explanation of isotopes and isotopic analyses and it includes an interesting discussion of beam theory, a technique which is not widely-known. Using it, one models long bones as if they were hollow beams and then measures the strength or resistance of the bones to bending and twisting. More active people have bones that exhibit greater resistance. This chapter demonstrates how the various subfields of palaeonutrition can be combined to give information on the nutritional status of past populations. In addition, there were many recently published entries in the numerous references for this chapter.

The other chapter in this part was "Parasite Ecology of Two Anasazi Villages" by Karl J. Reinhard. Since the research here was based on coprolites

found in caves, the methods discussed are limited in their applicability. Nevertheless, this chapter is an interesting and informative discussion of coprolite research.

Perhaps of most interest to zooarchaeologists are the seven chapters in Part IV, "Subsistence Strategies". The first three consider mobility. "Nutritional Constraints and Mobility Patterns of Hunter-Gatherers in the Northern Chihuahuan Desert" by Kristin D. Sobolik is one of the best in the book. Whereas both Marquardt (Chapter 2) and Sandweiss (Chapter 8) provided examples of sedentary peoples who lacked a domesticated plant food source, Sobolik's example shows that restricted availability of plant resources can cause mobility in a human population. Her study is impressive in its integration of palaeonutritional, archaeobotanical, faunal, and coprolite evidence. In Chapter 12, "Sedentism in Coastal Populations of South Florida", Michael Russo and Irvy R. Quitmyer show how the study of shellfish has challenged traditional migratory models of cultural evolution in Florida. They were able to demonstrate that shellfish were collected year-round. Scallops were not significant to the diet of the past population, but they were very useful to the investigators for establishing seasonality. The effects of volcanic ash on subsistence and mobility was a theme in Deborah M. Pearsall's "Reconstructing Subsistence in the Lowland Tropics: A Case Study from the Jama River Valley, Manabi, Ecuador". Like Reinhard's study (Chapter 10), this one (Chapter 13) is somewhat restricted in its applicability. However, her method of using the quantity of wood per phase as a standard for comparing the amount of burning and thus the relative amount of possible plant preservation deserves close scrutiny.

In Chapter 14, Gail E. Wagner considered "Feast or Famine? Seasonal Diet at a Fort Ancient Community". The discussion centers on corn shortages and storage in a focal economy. She determined the seasonality of the storage pits using deer mandibles and argued that shortages in a main food source, such as corn, can lead to political and economic changes. The chapter could have been placed at the end of this Part or even as the first entry in the next Part as it certainly relates faunal material with a social system.

"Game Procurement among Temperate Horticulturists: The Case of Garden Hunting by the Dolores Anasazi" was the subject of Chapter 15 by Sarah W. Neusius. Garden hunting has been studied most in the tropics, so one of Neusius' purposes was to determine if similar activities occurred in the southwest US. This chapter was of particular interest to me since I think that garden hunting was a significant activity for Iroquoian women. In her discussion of the zooarchaeological evidence for such hunting, she recommends 1) determining the relative proportion of species that are likely targets of garden hunting, 2) comparing the taxonomic composition of the faunal assemblage to natural species distribution and abundance, and 3) measuring the diversity in the faunal assemblage. This last test is admitted to be "a less than perfect indicator of garden hunting" (p.278).

Just as Sobolik (Chapter 11) combined many different types of

environmental analyses, so too Susan D. deFrance, William F. Keegan, and Lee A. Newsom consider diverse studies in Chapter 16, "The Archaeobotanical, Bone Isotope, and Zooarchaeological Records from Caribbean Sites in Comparative Perspective". Complications added by the exploitation of both marine and terrestrial plants and animals resulted in incongruities between the results of the faunal and the isotopic analyses, not all of which the authors could explain. However, the isotopic evidence suggested consumption of root crops which, because of their perishable nature, were not part of the archaeobotanical evidence.

The last chapter in this part, Kathleen M. Byrd's "Subsistence Strategies in Coastal Ecuador" cautions researchers not to judge a people's diet on the basis of a single site. Although she thinks more information is needed on fish seasonality, she makes good use of fish feeding habits to determine the main fishing methods used.

"Social Complexity" is the title of Part V which includes two chapters. While one can agree with the editors that "the uses of environmental resources are important ways to symbolize and affirm social categories and to enhance social and political stability" (p.317) the paucity of entries in this section confirms that "this is probably the arena in which environmental data are traditionally most underutilized" (ibid.). The first chapter in this section, "Meat Consumption and Bone Use in a Mississippian Village" by Melinda A. Zeder and Susan R. Arter is an example of how difficult it is to determine social factors from zooarchaeological remains. While the authors demonstrate differences in the densities of the deer remains in different areas of the site, the causes of these differences are not evident in the bones, weakening their conclusion that their study "highlights the potential for biological remains to go beyond environment and diet and join the mainstream of archaeological analysis for the study of complex social and economic interactions of the past" (p.335). Chapter 19, Elizabeth M. Scott's "Who Ate What? Archaeological Food Remains and Cultural Diversity", seems more successful in this regard. This is, in part, because she can incorporate historical data to pose social questions as well as to make interpretations of her zooarchaeological findings. Scott's chapter leads nicely into the last part of this book.

This concluding Part contains only Kathleen A. Deagan's "Environmental Archaeology and Historical Archaeology". While the preceding studies have emphasized the necessity of understanding the environments in which the sites were situated, this last chapter demonstrates that with historic sites, understanding the local environment might be neither sufficient nor so important. International markets and widely dispersed supplies and demands require different questions and methods for historical zooarchaeology. This is well-argued and made me think that another volume on historic environmental archaeology would be a good possibility.

Obviously, despite the length of this review, I have not done justice to the individual articles. As a whole, they are very informative and interesting. When I finished this book, I felt as I often do after a CAA conference. I had learned many

specific facts from sites spread across a large area and from many time periods; most of the "presentations" were really interesting, although limited, discussions of a specific study. The editors have made a good attempt to overcome this impression of dipping into a smorgasbord of different topics by organizing the chapters into parts and, more significantly, by providing nice, short introductory sections for each part. These, combined with the introductory chapter, unite the chapters into a related whole. Most of the articles have excellent reference sections, allowing the reader to explore specific topics more thoroughly, and these are a great asset. Finally, the paperback edition is very well-bound and attractively formatted but there are too many editorial errors. Most are merely annoying but some are more serious. Unfortunately, part of the first sentence on page one is missing, leaving the statement of the purpose of the book incomplete. In summary, I found this volume very stimulating reading and would recommend it to all zooarchaeologists. It would also be useful as a collection of supplementary readings for a zooarchaeology or an environmental archaeology course.

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Butzer, Karl W. 1982. Archaeology as Human Ecology: Method and Theory for a Contextual Approach. Cambridge University Press, Cambridge.

Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders, Philadelphia.

Schiffer, Michael B. 1976. Behavioral Archeology. Academic Press, N.Y.

The Skeleton of The Heart

David Campbell
Assistant Collection Manager, Mammal Collection, Canadian Museum of Nature

Years ago while perusing the fine print of an aged edition of Septimus Sisson's (1914) "The Anatomy of the Domestic Animals" I found a brief reference to the *ossa cordis* - two bones which reportedly form in the aortic fibrous ring in the heart of cattle. As no illustration accompanied the account, my curiosity was aroused.

I immediately purchased a beef heart from the local supermarket and carefully dissected it but was disappointed when I found only a cartilaginous structure in the interventricular septum. I assumed that ossification would occur as the animal aged but at the time had no way of confirming this.

During my subsequent career with the Canadian Museum of Nature I have worked closely with their extensive collection of mammal skeletons but never encountered an example of the *ossa cordis*. Neither did I encounter researchers in the field who were familiar with the bones. A couple of additional literature references were found, one (Smith, 1960) with a vague outline of the bone but nothing that gave a clear indication of its structure.

I decided it was time we met. A visit to a local abattoir on a day when two aged cattle were being butchered yielded the two specimens illustrated below.

The *ossa cordis* are classified as heterotropic bones. Romer (1962)

describes such structures as not being part of the proper skeleton but arising as accessory to body organs in one vertebrate group or another, seemingly as skeletal "afterthoughts". The *ossa cordis* result from the ossification later in life of the aortic fibrous ring, which surrounds the lower end of the aorta just above the left ventricle. The ring supports the aorta and anchors the two cusps of the aortic valve. When ossification occurs the smaller of the two resulting bones serves to attach the left posterior aortic cusp and the larger bone, the right cusp.

The two bones are very different in size. In both specimens reported here the left elements exceed two and the right elements exceed five centimeters in length. As ossification is progressive through life, size will vary from non-existent to at least that observed here. Sisson (1914) reports that the right element is usually about four centimeters in length so I conclude that my samples represent the bone's upper size limits.

The two specimens differ greatly in appearance but have certain features in common. The right element is flattened and follows the curve of the aortic wall. The dorsal edge is thinner than the ventral border and flares out laterally. Its periphery is rough and knobby. The anterior end of the bone is tapered while the posterior end is more or less forked. The smaller left element (which Sisson notes is inconstant) has a flattened triangular shape. The bones are dense and substantial and are as likely to survive in archaeological sites as any other bone.

The interpretive significance of the *ossa cordis* may someday lie in its being an indicator of age although the comparative collections are not yet available so far as I know. Presence of the bone in association with other skeletal elements might also indicate that evisceration did not occur.

The literature states that *ossa cordis* occur in deer and bovids (Romer, 1962). Sisson (1914) mentions that a cartilage plate on the right side of the aortic ring of horses frequently becomes "more or less" calcified in old animals, but does not actually name the structure as an *os cordis*.

I am intrigued and a bit shaken that bones of this size and substance from animals as common as deer and bovids have routinely been missed during the careful preparation of museum specimens and are largely unknown to all but a few specialists. The staff at the abattoir knew about them all along.

The following illustrations (Figure 1) show four views of the right and two views of the left *os cordis* for each of the individuals examined. Orientation of the specimens is the same to facilitate comparison.

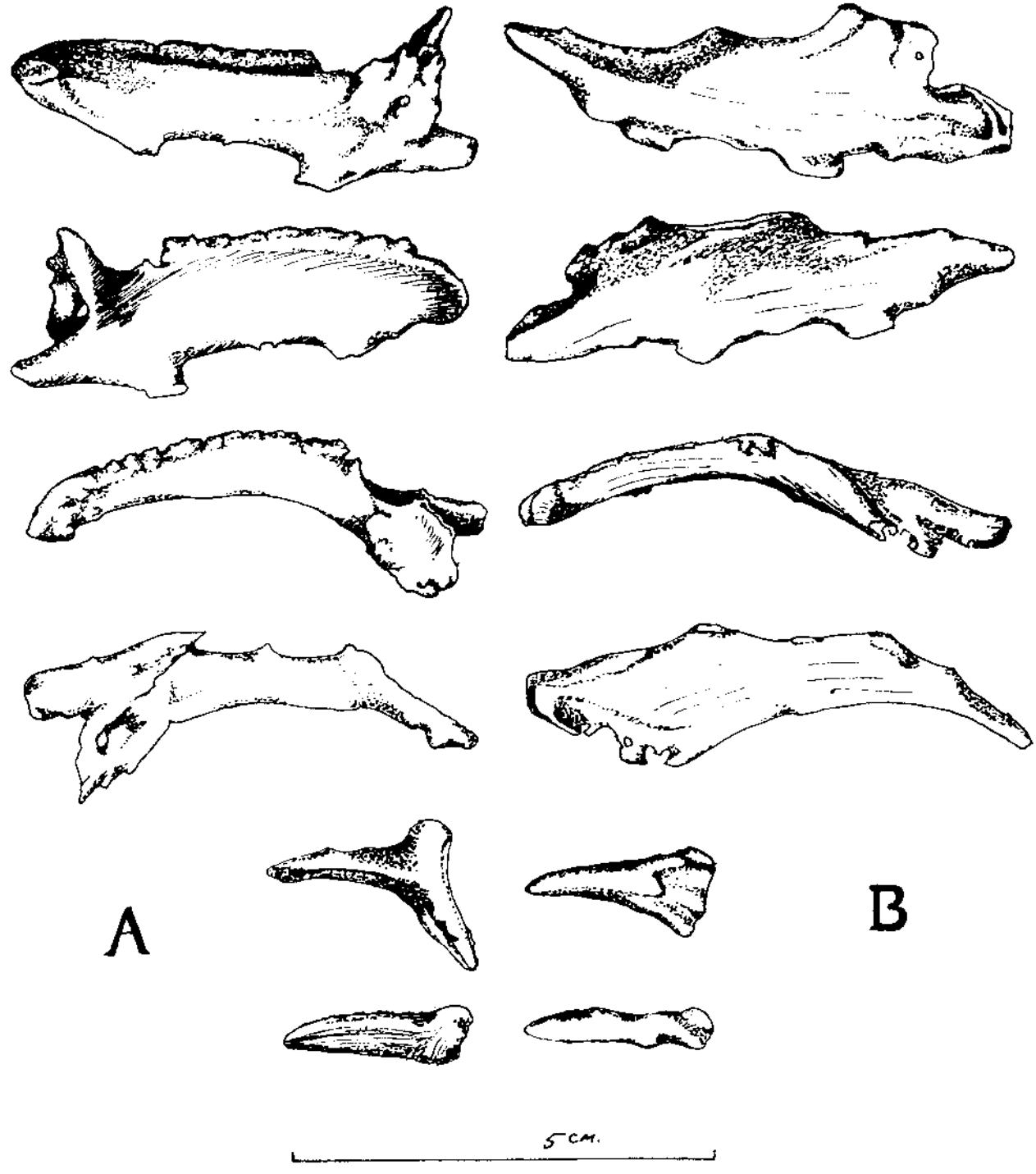
References:

Romer, Alfred Sherwood. 1962. The Vertebrate Body. (third edition) W.B. Saunders Company, Philadelphia.

Sisson, Septimus. 1914. The Anatomy of the Domestic Animals.(second edition) W.B. Saunders Company, Philadelphia.

Smith, Hobart M. 1960. Evolution of Chordate Structure, An Introduction to Comparative Anatomy. Holt, Rinehart and Winston, Inc.

Figure 1 - *Ossa cordis* bones from aged cattle *Bos taurus*.



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Recent Publications / Publications Récentes

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Archaeofauna, Ichthyoarchaeology: Fish and the Archaeological Record, Volume 5, October 1996 is a whole issue reporting on the Proceedings of the Eighth Meeting of the ICAZ Fish Remains Working Group.

Selected papers include:

- *Scaly heads and tales: detecting commercialization in early fisheries*, by S. Perdikaris;
- *Identification of fish bones - How certain is it?*, by O.Lernau;
- *Fish bone diagenesis in different soils*, by R.A. Nicholson;
- *Medieval fish weirs: the archaeological and historical evidence*, by A. Lampen;
- *Lake sturgeon fishing in Prehistoric Iroquoian sites near Lake Simcoe, Ontario*, by S. Needs-Howarth;
- *On the boundaries of osteometry applied to fish*, by J. Desse and N. Desse-Berset.

Carlson, R.L. and Dalla Bona, L. (eds) 1996. Early Human Occupation in British Columbia. UBC Press, Vancouver B.C.

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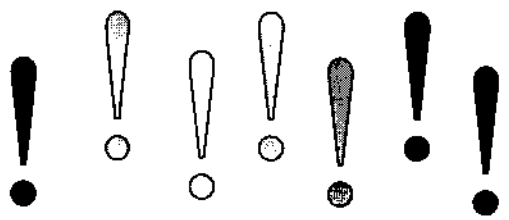

Forthcoming Conferences / Conférences à Venir

1997

CAA

Canadian Archaeological Association 30th Annual Meeting
Delta Bessborough Hotel
Saskatoon, Saskatchewan
7-11 May 1997

The session on Sat. May 10 from 9:10 - noon deals with *"Current Research on Zooarchaeology"* chaired by G. Monks.

9:10 - Introduction, Greg Monks
9:20 - Morrison, D. and Whitridge, P. - *Estimating the age and sex of caribou from mandibular measurements*
9:40 - Greenfield, H.J. - *The origins of metallurgy - A zooarchaeological approach*
10:00 - Zita, P. - *Hard times on the Northwest Coast: A deer phalange marrow extraction at Namu, B.C.*
10:20 - Break
10:40 - Burke, A. - *Faunal approaches to logistical complexity during the Mousterian in western Crimea*
11:00 - Hjermstad, B. - *To boil or not to boil: The shaft and fragmentation indices*
11:20 - Monks, G.G. - *An archaeological perspective on Nootkan whaling*
11:40 - Discussion
The deadline for advance registration is April 14, 1997.

For conference registration contact:
Stacy Kozakavich
Dept. Anthropology and Archaeology
University of Saskatchewan
phone: (306) 966-4185
e-mail: cmc135@mail.usask.ca

Sixth Annual
BC Archaeology Forum
Stó:lo Nation
Chilliwack, BC
November 1997

For conference dates and information contact:
Heather Myles
Stó:lo Nation
Bldg. #5-7201 Vedder Rd.
Chilliwack, B.C.
V2R 4G5

1998

ICAZ

International Council for Archaeozoology
8th International Congress
University of Victoria
Victoria, B.C.
23-29 August 1998

The Organizing Committee invites proposals for sessions and workshops, and abstracts for papers and posters to be delivered as part of the conference programme. Sessions altready proposed include:

1. Dogs: Origins, regional variation and breed development in dogs.
Chair - Susan Crockford.
2. High resolution faunas at the Pleistocene/Holocene boundary.
Chair - Jon Driver.
3. Reassessing evidence for Mousterian Hunting Patterns.
Chair - Ariane Burke.
4. Archaeozoology of oceanic marine taxa: The state of the art.
5. Oceanic midden analysis: Problems, methods and results.
6. Patterns of faunal exploitation in Pacific prehistory: From observation to explanation.

Deadlines:

Submission of Sessions and Workshop Proposals: *September 15, 1997*
Submission of Abstracts: *January 30, 1998*
Long Papers submitted at Conference: *August 23, 1998*

Queries and session proposals may be directed to:

Rebecca Wigen - e-mail: rjwigen@uvvm.uvic.ca
Quentin Mackie - e-mail: qxm@uvic.ca

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Requests, Exchanges, Notices / Démandes, Echanges, Avis

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• Suzanne Needs-Howarth is working on establishing a suite of diagnostic elements to compare taxonomic abundance of fish between the three prehistoric Iroquoian sites she's analysing for her doctoral thesis. While she has not yet found any reference to diagnostic elements in the North American literature, she suspects people may have discussed this topic in conference presentations, consulting reports or theses. Her question to CZ readers: "If you have any information on the theory and/or application of diagnostic elements in freshwater North American fish, could you please e-mail me the titles and whereabouts? Could you also pass along the names of any zooarchaeologists you know who are working on this topic?" You can contact her at:

mailing address: 14 Grimthorpe Rd., Toronto, ON, M6C 1G3
phone: (416) 652-9099
fax: (416) 944-0814
e-mail: 75304.2724@compuserve.com

• Darren Tanke would like to draw your attention to the fact that he has set up an osteopathy home page dealing with dental and bone pathology of fossil and recent vertebrates. You can visit it at:
http://dns.magtech.ab.ca/dtanke