

THE ZOOLOGICAL REFERENCE COLLECTION OF THE BIOLOGISCH-
ARCHAEOLOGISCH INSTITUUT IN GRONINGEN

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CONTENTS

1. INTRODUCTION
2. COLLECTING SUBFOSSIL FAUNAL REMAINS DURING
EXCAVATIONS
3. IDENTIFICATION OF FAUNAL REMAINS
 - 3.1. General
 - 3.2. Identification books
4. THE REFERENCE COLLECTION
 - 4.1. History of the collection
 - 4.2. The origin of the collection
 - 4.3. The processing of the carcasses to obtain skeletons of vertebrates
 - 4.4. The arrangement of the reference collection
5. ACKNOWLEDGEMENTS
6. REFERENCES
7. KEYWORDS

APPENDIX

The catalogue of the reference collection of the Biologisch-Archaeologisch Instituut
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1. INTRODUCTION

During the last 25 years a reference collection for the purpose of the identification of animal remains collected during excavations of pre- and protohistoric dwelling places, graves, sacrificial places, *etc.* has been built up at the Biologisch-Archaeologisch Instituut of the State University of Groningen. This collection is still growing.

In this article remarks will be made on the retrieving of subfossil faunal remains during excavations in past and present, the identification of faunal remains, and the reference collection of the B.A.I. The catalogue of this reference collection is added with the purpose of informing other archaeozoologists about the specimens available in Groningen. This information may be of some help in planning future research.

2. COLLECTING SUBFOSSIL FAUNAL REMAINS DURING EXCAVATIONS

During the commercial excavations of the *terpen* in the clay region in the north of the Netherlands at the beginning of this century, it was not possible to collect all the animal remains that came to light (Clason, this volume). Van Giffen (1913) in the first place collected skulls and skull fragments, as was common practice in those days, but also collected long bones, vertebrae and pelvis bones. Although Van Giffen in 1915 deplored the fact that animal bones were neglected during excavations in Troy, Argos, Tiryns on the islands of Crete and the Cyclades by such well-known archaeologists as Schliemann, Van Dorpfeld, Evans, Halbheer, Boyd-Hawes and others, he more or less did the same in later years. During his systematic excavations of the *terpen* Wierhuizen (Van Giffen, 1917-1918) and Ezinge (Van Giffen, 1933), both in the province of Groningen, animal remains were collected selectively, in small numbers only, or not at all. During his excavation of a Roman Castellum at Valkenburg in the province of South Holland in the 1940's, more bones were collected, although in the note-books in which the finds were noted down during the excavation, a reference is occasionally made to (large?) bones that were thrown away.

When systematic archaeozoological research started in Groningen in 1959, it became standard procedure that faunal remains were carefully collected during excavations. In the course of time, the way in which the remains were collected changed. In the beginning settlements were still excavated with the help of labourers with spades, and animal remains were collected by hand. Later the larger-scale excavations were mainly carried out by machines, which made the collecting procedure less accurate. Payne (1972a, 1972b) has drawn our attention to the fact that small faunal remains can be overlooked during excavations. The sieving of soil samples therefore became routine during the seventies (Clason & Prummel, 1977; Prummel, 1980; 1983). The objects of this sieving are both to find fragments of the bones and shells of larger animals, and to find the bones and shells of small-size species of vertebrate animals and molluscs.

3. IDENTIFICATION OF FAUNAL REMAINS

3.1. General

In the period when only a few large, often complete, skulls, jaws and other skeleton parts were collected, identification to species was possible in most cases. A reference collection consisting of the skeletons of a recent ox, horse, sheep, goat, pig, cat, dog, goose, duck and domestic fowl sufficed. When it became the general practice to collect as many faunal remains as possible, the material to be identified became more numerous, and the number of species represented also increased considerably.

Identification without the help of identification books and a reference collection became impossible.

3.2. Identification books

In 1959 there were two books available in Groningen for the identification of mammal bones, that of Hué (1907), already used by Van Giffen when he was working on the bones of the *terpen*, and Cornwall's *Bones for the Archaeologist* which was first published in 1956

(1976). In 1972 Schmid's bone atlas followed. Gilbert (1973) published an identification book for North American mammals and Pales & Lambert (1971a, 1971b) started a series of maps with illustrations of long bones of which two, the Herbivores and Carnivores, have appeared thus far.

Boessneck, Müller & Teichert (1964) discussed the differences between the skeletons of sheep and goat, Degerbøl (1970) those between *Bos primigenius* and *Bos taurus*, Stampfli (1963) those between *Bos p.* and *Bos t.* on the one hand and *Bison bonasus* on the other, Olsen (1960) the differences between *Bison* and *Bos*.

The skulls of the mammals of Central Europe were described and drawn (illustrated) by Gaffrey (1953).

Husson (1962) and Chaline *et al.* (1974) published books for the identification of the animal remains found in owl pellets. These books are also useful for archaeozoologists.

The antiquarian books of Milne Edwards (1867-1868) with excellent engravings of fossil and subfossil bird bones from France can be useful to the archaeozoologist. Dependable books on birds have been compiled by Boessneck, and his co-workers and students in München for the identification of swans and geese (Bacher, 1967), fowl (Erbensdobler, 1968), pigeons (Fick, 1974), small fowl (Kraft, 1972), owls (Langer, 1980), Accipitridae (Otto, 1981), ducks, shelducks and sawbills (Woelffle, 1967).

So far no identification books for fish remains have been published, although the description and photographs of the fish remains of Haithabu published by Lepiksaar & Heinrich (1979) can be helpful. For the identification of fishvertebrae by X-ray photographs, the work of Desse & Desse (1976) can be useful.

Books for the identification of molluscs were written by Entrop (1965), Gittenberger *et al.* (1970) and Janus (n.d.).

4. THE REFERENCE COLLECTION

4.1. History of the collection

Notwithstanding the availability of all these identification books, a good comparative collection of vertebrate skeletons and mollusc

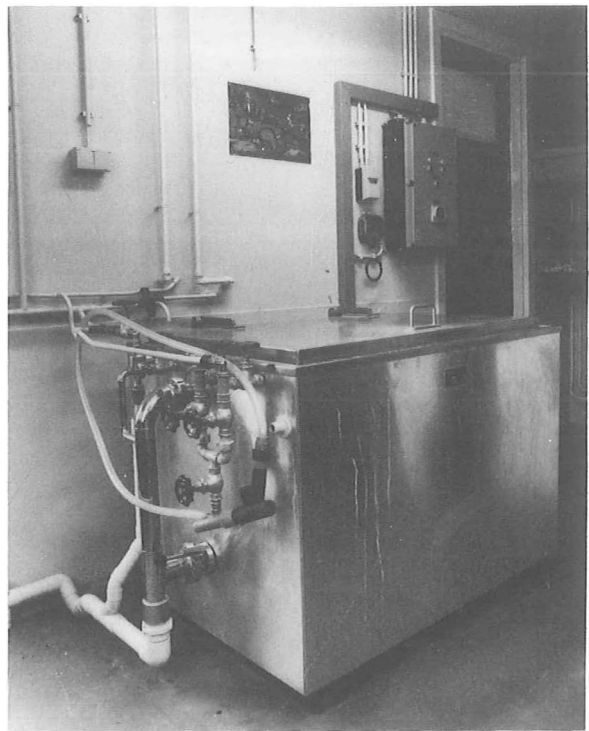


Fig. 1. The interior of the workroom in Paddepoel and the maceration installation.

shells is indispensable for the identification of subfossil faunal material. *Accurate identification is the basis of archaeozoological research.* In 1959 there were available in Groningen some recent skulls of ♂ and ♀ Banteng, Bali cattle, moeflon, Drents heideschaap (Drente heath sheep), 300 skulls of cats and the skeleton of a goat with large horns. Van Giffen had collected those specimens in the 1910's and 1920's. Since then we have tried to build up a comprehensive reference collection of animal skeletons and mollusc shells: concentrating on those living in Europe and the Near East.

4.2. The origin of the collection

The Groningen collection consists, in general, of animals that have met with a natural death, and which have been received from private individuals and institutions. Another source of skeletons are old collections of museums and teaching institutions which are no longer displayed in exhibitions or used for teaching.

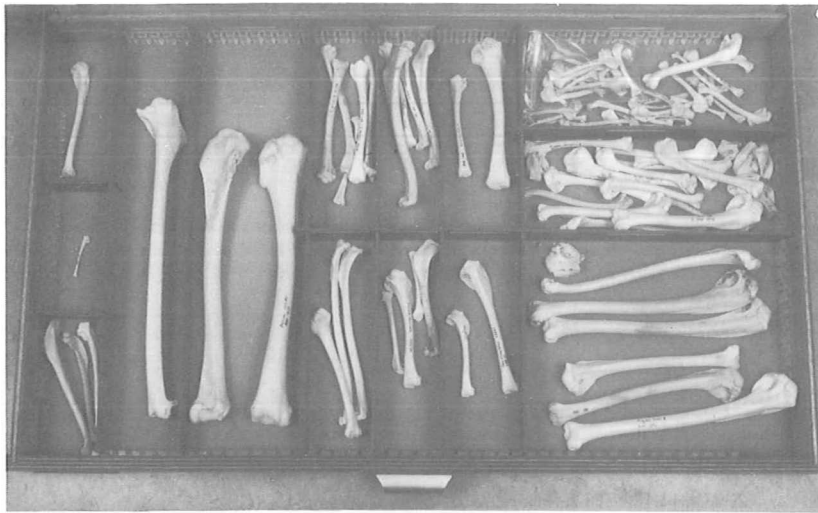


Fig. 2. Part of the skeleton collection of the B.A.I. Bird humeri in a drawer.

A third possibility is the exchange of doubles in the B.A.I. collection with those of other institutes. Our aim is to have at least one female and one male of each species of the vertebrates of Europe.

4.3. The processing of the carcasses to obtain skeletons of vertebrates

At first the skeletons were obtained in a primitive way by letting the carcasses, of which skin and flesh had been removed, rot in a pail of water in a room of the B.A.I. This method was, understandably, not very popular. After some years, a *geruchslose Macerationanlage* was bought in Germany and housed in a special room. Unfortunately, the apparatus was not always as odourless as the name promised. This sometimes gave problems. When this apparatus finally collapsed a few years ago due to old age, a new working place was found in a farm in Paddepoel to the north of Groningen. Here a new maceration apparatus was installed (fig. 1). This maceration apparatus consists of a big tank which can be filled with water that can be heated. The unpleasant smell caused by the rotting process can be sucked off. The carcasses are carefully cleaned and put into the water of the tank. The water is heated to c. 40°C. After c. 14 days the bones of the skeletons are clean, but the bones may still be fatty. If so, they are soaked for some hours in a warm solution

of a biological soap. After that, all remains of tendons are scraped off and every bone of the skeleton is tagged with the number of the skeleton and the Latin name of the species. If the skeleton belongs to a species that is new for the collection, the bones are added to the reference collection that is continuously used. Otherwise it is stored in a box.

The method for obtaining fish skeletons differs slightly from what is described above. If a species is not yet represented in the general collection, the bones are picked out by hand after the fish has been gently poached. If the species is already present in the collection the fish is macerated.

4.4. The arrangement of the reference collection

The reference collection is arranged so as to facilitate the identification of subfossil faunal material. The collection is first of all divided into specimens of phyla, of Chordata and of Mollusca.

The Chordata are then subdivided into Pisces or fishes and Tetrapoda or four-footed animals.

The reference collection of fishes contains specimens of the Euselachii and Asteichthys or bony fishes. Of the first (*viz.* the sharks and rays) the calcareous centre of the vertebrae, the teeth, parts of the skin and the spines are collected.

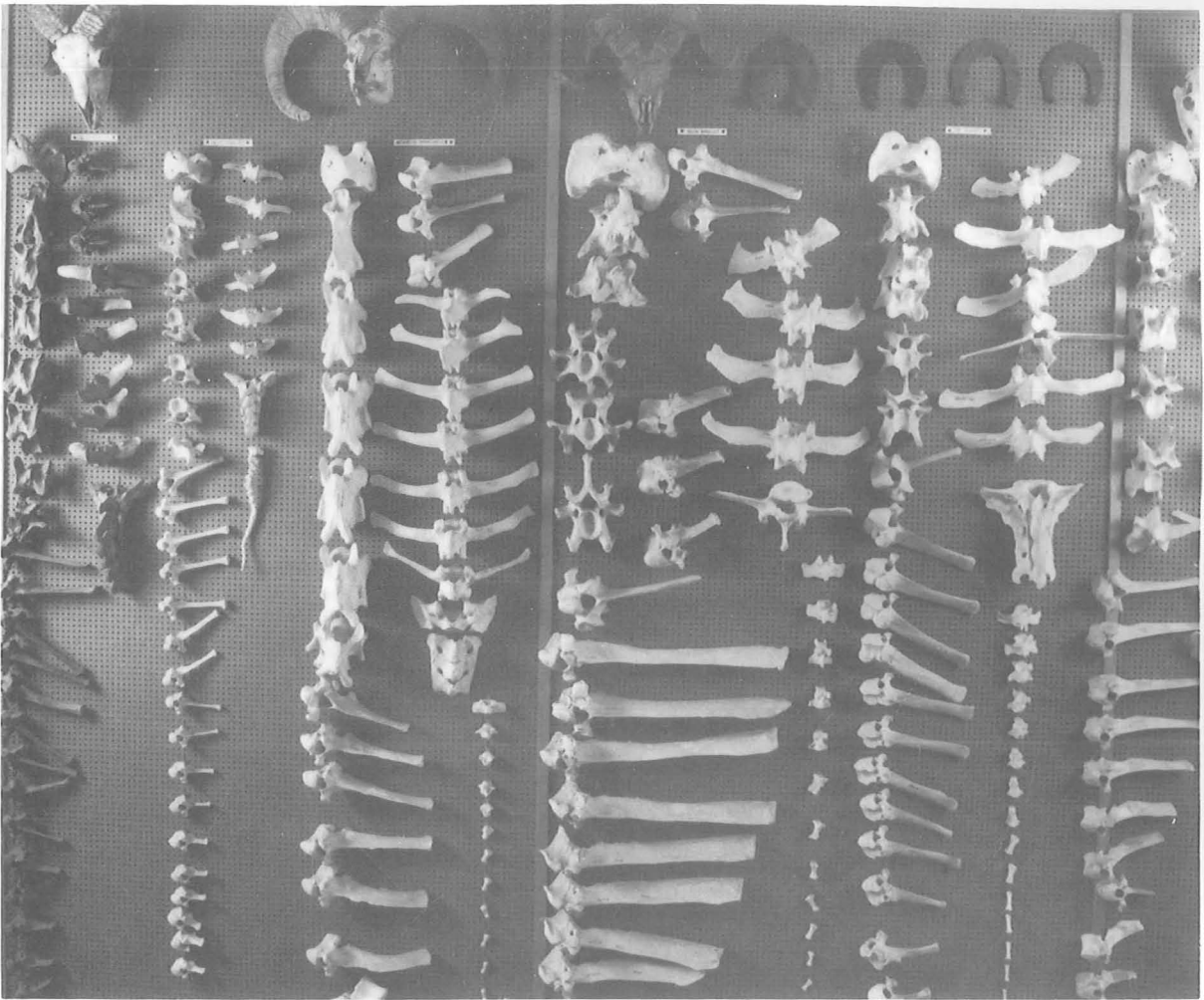


Fig. 3. Vertebrae hanging on little hooks fastened on the walls.

The different skeletal elements of the most common species of the bony fishes, both marine and freshwater, are stored together in groups in little open boxes arranged in drawers. Otholids and some of the scales are also preserved. A separate collection of length-classes is available for each of the more important freshwater species.

The Tetrapoda are divided according to the classes Amphibia, Reptilia, Aves and Mammalia of Western Europe and the Near East. These are grouped in orders, Lagomorpha, Cetacea *etc.* for the Mammalia, and Gaviiformes, Podicipediformes, *etc.* for the birds.

The bones of the skull, the fore and hind extremities, the ribs and vertebrae are then stored together, which also facilitates compa-

risson and identification of the often broken subfossil animal remains. The skulls are kept on shelves, the long bones in drawers (fig. 2), the ribs and vertebrae (fig. 3) hang from hooks fastened to the walls of the main workroom.

The Mollusca are not yet represented by numerous species. Of the species that are represented, one or more shells are stored together in a box and placed in a drawer.

5. ACKNOWLEDGEMENTS

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7. KEYWORDS

The Netherlands, Groningen, archaeozoology, Mammalia, Aves, Pisces, Mollusca, identification books, zoological reference collection.

APPENDIX
THE CATALOGUE OF THE REFERENCE COLLECTION OF THE BIOLOGISCH-
ARCHAEOLOGISCH INSTITUUT
A.T.Clason, R.J.Kosters & T.P.Jacobs

MAMMALIA WILD
MAMMALIA DOMESTICATED
AVES WILD
AVES DOMESTICATED
REPTILIA
AMPHIBIA
PISCES
MOLLUSCA

The catalogue is printed on microfiches (5), which are at the backside of this volume.