

## **Introduction**

The present work is a fully illustrated field and laboratory manual of practical interest to the experienced fish bone analyst and the student of fish osteology. It was especially designed with regard to the particular problems and requirements of archaeologists. In the field it is intended to be useful for preliminary identification when comparative material is not available. As a laboratory handbook, it will familiarize the user with all the bony elements to be found in archaeological and comparative material. Because the drawings are of disarticulated elements, and organized according to anatomical origin, this convenient illustrated guide will help make sense of the jumble of bones that results from the processing of specimens into a comparative skeletal collection. Above all, the prime objective of this manual is to show basic osteological differences between various fish taxa on the basis of complete osteologies.

Despite the limited number of species depicted, this manual can at the very least help to rough sort archaeological remains into a general category of fish as opposed to other vertebrates. Because it encompasses several of the most common marine forms found in the Northern Hemisphere, it will help to narrow identification in many cases down to the level of family, if not to genus or species. Finally, this manual can help reduce problems of quantification and interpretation by making the user familiar with all identifiable elements of the fish, and not just those most easily recognized. Although it is not practical to produce an exhaustive manual covering all fish species found in this area of the world, it is hoped that this handbook will precipitate further interest and offer practical aid in the generation of osteological collections of different fish species, and emphasize the importance of continued work in this previously neglected area of archaeological analysis.

## **Fish Identification**

For the archaeologist interested in working with fish bones, the availability of published osteologies is very restricted. Those that have been produced are found widely scattered throughout the zoological literature, and are often difficult to obtain. Illustrated osteologies of fish are inevitably general, buried in general works of biological or zoological origin, and picturing mainly articulated skeletons. Most osteological studies were conducted in the early part of this century, and the early works such as Starks (1901), Allis (1909), Gregory (1933), and Tchernavin

(1938) are still the best illustrated. Later fish osteologies tend to focus on a single species, genus or family, and although some authors such as Norden (1961) have provided drawings of disarticulated elements, not every element is depicted individually. Other works such as those by Harrington (1955) and Mujib (1967) contain only very schematic diagrams. These fail to show sufficient detail for the identification purposes of the archaeologist. Most fish osteologies have naturally enough been prepared by zoologists for zoologists.

Until recently, fish remains in archaeological sites were largely ignored; partly due to the lack of adequate reference material, and partly due to the lack of familiarity with the bone elements. As more archaeologists have become concerned with the recovery and uses of fish remains, more attention has been paid to their analysis (eg. Olsen 1968; Casteel 1976; Jones 1976, 1982; Wheeler and Jones 1976; Morales and Rosenlund 1979; Marhn 1981; Huelsbeck 1981; Nichol 1982; Ham 1982; Le Gall 1984; Singer 1985; Leach 1986). To date, however, there has been little done towards producing illustrated material specifically for archaeological identification. Olsen (1968) has produced a general guide for the identification of fish, amphibians, and reptiles, but his intention in this work is to aid archaeologists in separating fish bones from those of other vertebrates. He does not attempt to provide an exhaustive guide to fish osteology.

Another basic reference in the archaeological analysis of fish remains is Casteel (1976), which functions primarily as an introduction to fish osteology, and as an invaluable source describing a variety of archaeological uses for identified fish remains. Other published references include Morales and Rosenlund (1979) and Le Gall (1984). The former is an attempt to standardize fish bone measurements, while the latter concentrates on fish vertebrae and a few other elements such as quadrates, dentaries, and angulars. None of these were ever intended as a comprehensive guide for the identification of fish remains in any part of the world.

Olsen (1968:4), Casteel (1976:7) and others agree that a detailed published study of many fish skeletons is badly needed. The present handbook is a collection of the osteologies of several different species, and its production was inspired by this recognized need. The fact that each osteology is a complete work in itself allows for additions to be made in the future. At present, however, it will perhaps suffice to produce a field and laboratory manual that will permit the archaeologist to begin a rough classification of his material, and make more effective use of comparative osteological collections as these become increasingly available.