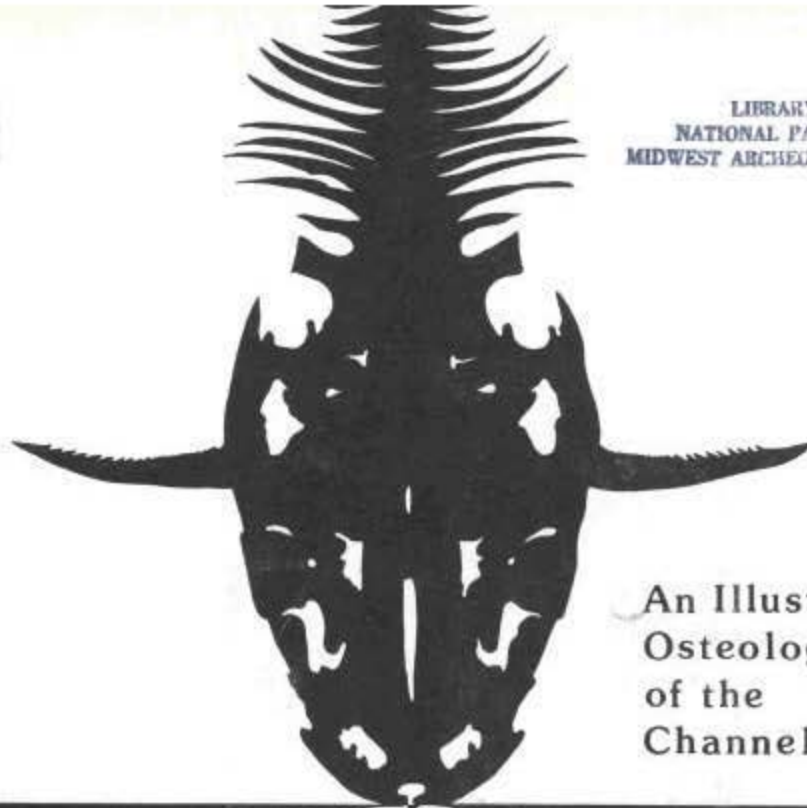


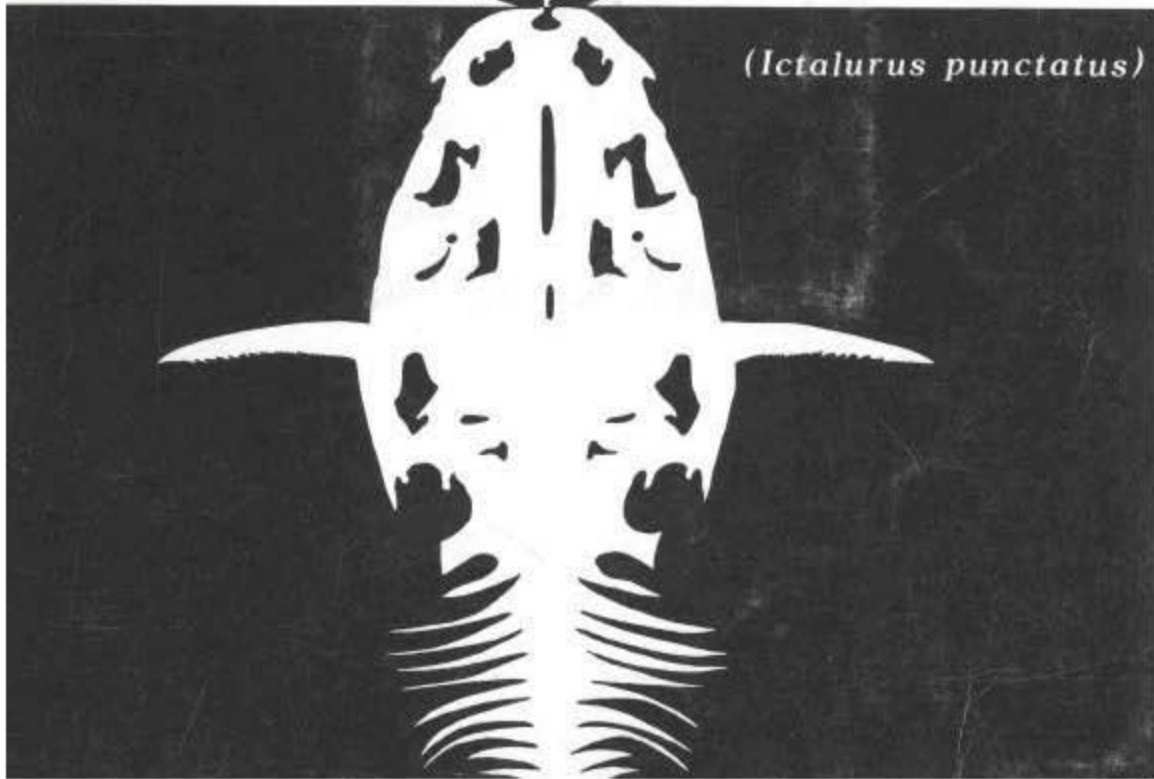
MWAC
Occasional
Studies
in
Anthropology
#2

LIBRARY COPY
NATIONAL PARK SERVICE
MIDWEST ARCHEOLOGICAL CENTER



An Illustrated
Osteology
of the
Channel Catfish

(Ictalurus punctatus)



MWAC OCCASIONAL STUDIES IN ANTHROPOLOGY
#2

ON LIBRARY - MNAC

LIBRARY COPY
NATIONAL PARK SERVICE
MIDWEST ARCHEOLOGICAL CENTER

An Illustrated Osteology
of the
Channel Catfish
Ictalurus punctatus

by
Raymond L. Mandell

National Park Service
Midwest Archeological Center
Lincoln, Nebraska
1973

ACKNOWLEDGEMENTS

I would like to acknowledge the encouragement and overall assistance provided by Carl R. Falk, University of Nebraska and Robert K. Nickel, Midwest Archeological Center. Dr. John G. Lundberg of the Zoology Department, Duke University reviewed drafts of the figures and provided valuable suggestions and corrections. I am also indebted to personnel at the Midwest Archeological Center for their support and technical assistance.

CONTENTS

List of Illustrations	19
Introduction	1
Illustrations	2
References Cited	11

LIST OF ILLUSTRATIONS

1. Neurocranium, dorsal and ventral views	3
2. Neurocranium and associated left cranial elements.	4
3. Lateral view of right side of cranium.	5
4. Ventral view of mandibles, hyoid bar and pectoral girdle	6
5. Lateral view of left side of anterior portion of skeleton.	7
6. Individual elements of the Channel Catfish	8
7. Individual elements of the Channel Catfish	9
8. Vertebrae of the Channel Catfish	10

INTRODUCTION

There is a deficiency of published material illustrating Piscian osteology in a manner useful for element and/or taxonomic identification. The purpose of this paper is to provide an illustrated atlas of the osteology of the Channel Catfish (*Ictalurus punctatus*) to aid the zooarcheologist in the identification of Ictalurid remains. The illustrations are not intended to serve as a substitute for comparative materials, but rather, as a supplement to a comparative collection, aiding in element nomenclature and taxonomic assignment to the family level.

Three specimens have been utilized in the figures. Specimen 1 was 500mm in total length; standard length was 408mm and head length 110mm. Total length for specimen 2 was 600mm, standard length 510mm and head length 115mm. Specimen 3 was 473mm in total length; standard length was 370mm and head length 108mm. Specimens 1 and 2 were prepared by enzyme (papain) maceration, degreased in an acetone bath and reconstructed. Specimen 3 was eviscerated, defleshed and placed outdoors where beetles rendered a fairly clean, articulated skeleton. For photographic purposes all specimens were coated with a "smoke film," utilizing burning magnesium ribbon, to provide a uniform surface color for clarification of small features. Specimen 1 was utilized in Figures 1 and 2, Specimen 2 in Figure 3 and Specimen 3 in Figures 4 and 5. All three specimens were used in compiling Figures 6, 7 and 8.

Identification of the elements was facilitated through the use of specimens which are a part of the comparative vertebrate collection developed by the staff of the Midwest Archeological Center in conjunction

with archeological programs of the National Park Service. References utilized in element nomenclature include: Gregory (1932), Kindred (1919), Lundberg (1975), Olsen (1968) and Starks (1901).

ILLUSTRATIONS

Dorsal and ventral views of the neurocranium with the various component elements identified (Fig. 1) initiate the series of figures. Progressively through Figure 5, additional elements are included in order to more clearly demonstrate the association of the various elements. Figure 2 demonstrates the relationship of the major left dorso-lateral cranial elements and the neurocranium. Figure 3, a lateral view of the right side of the cranium, is relatively complete, lacking only the hyoid bar and the nasal bones. The latter are illustrated in Figures 4 and 5. Figure 5 is a lateral view of the left side of the complete cranium. This illustrates the articulation of the cranium and the post-cranial skeleton. Figures 6 through 8 present the individual elements with notes on orientation. These figures were included to facilitate the identification of individual or disarticulated elements and to clarify their orientation within the articulated skeleton.

Figure 1.

A. Neurocranium (dorsal view)

B. Neurocranium (ventral view)

bo	basioccipital
epo	epistolic
eth or	ethmoid cornu
fr	frontal
l eth	lateral ethmoid
pro	prootic
ps	parasphenoid
pt	posttemporal
ptr	pterosis
se	supraethmoid
so	supraoccipital
sq	sphenotic

Figure 2.

- A. Neurocranium and associated left cranial elements (dorso-lateral view)
- B. Neurocranium and associated left cranial elements (ventral view)

hmd	hyomandibular
mpt	metapterygoid
mx	maxilla
nrc	neurocranium
pal	palatine
pmx	premaxilla
pre	preopercle
q	quadrate

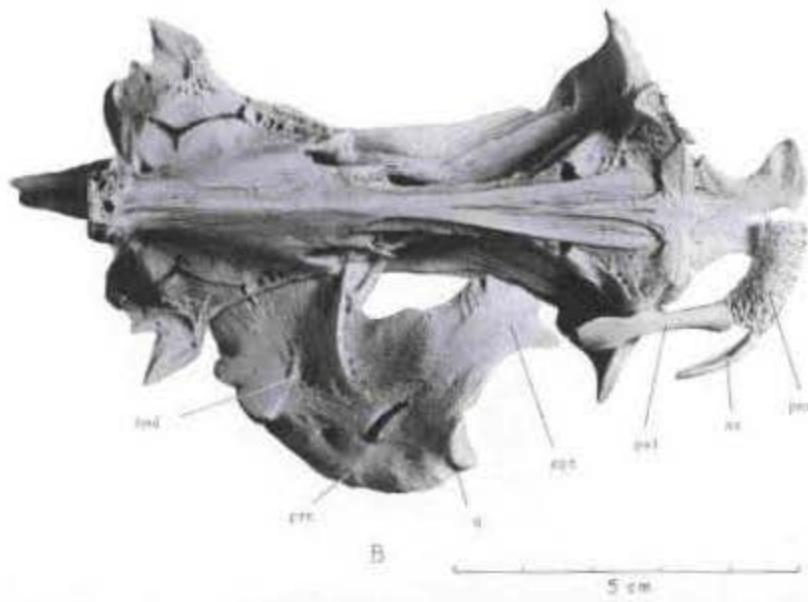
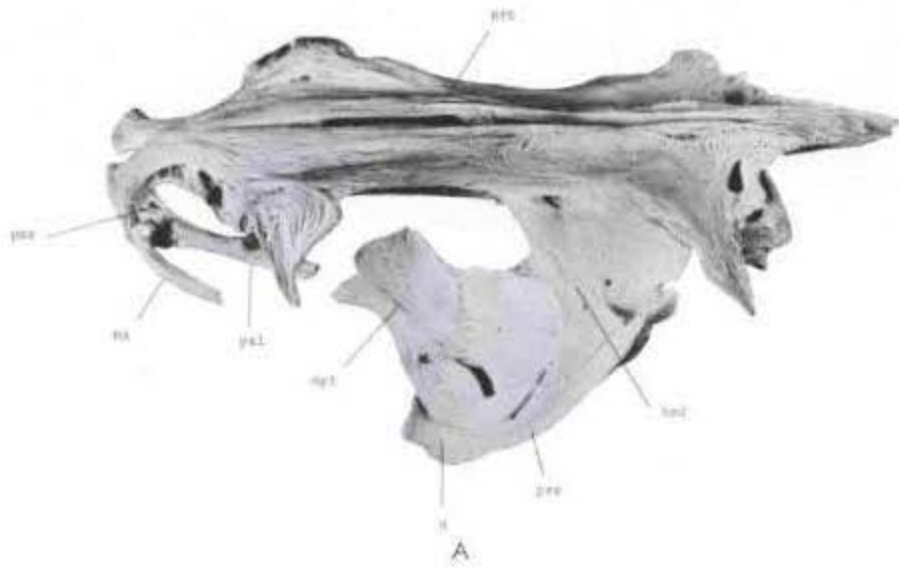


Figure 2. Neurocranium and associated left cranial elements.

Figure 3.

Lateral view of right side of cranium

an	angular
art	articular
clt	cleithrum
cor	coracoid
dn	dentary
hmd	hyomandibular
iop	interopercle
mpt	metapterygoid
mx	maxilla
nrc	neurocranium
op	opercle
pal	palatine
pec sp	pectoral spine
pre	preopercle
q	quadrate
sclt	supracleithrum

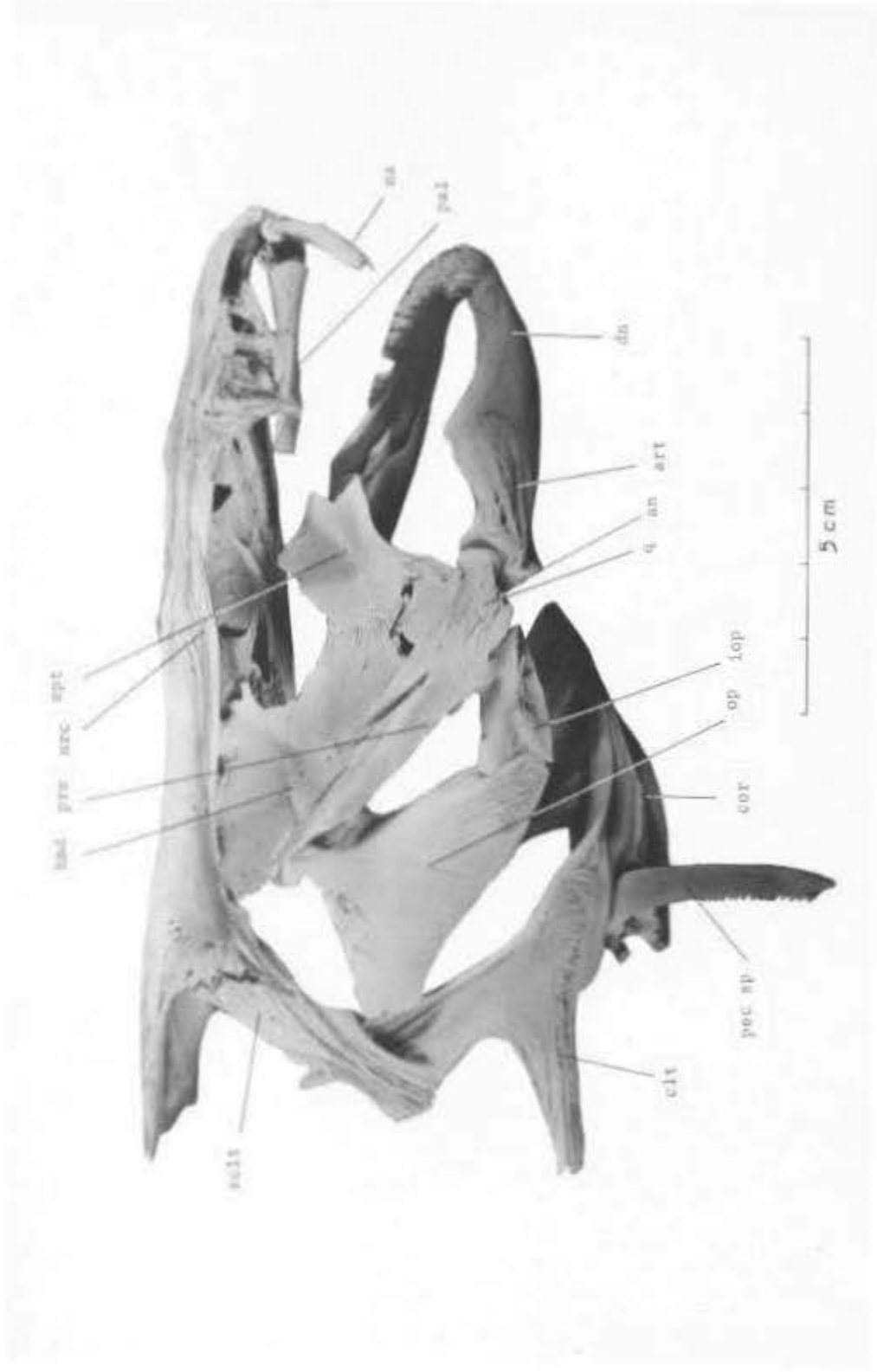


Figure 3. Lateral view of right side of cranium

Figure 4.

Ventral view of mandibles, hyoid bar
and pectoral girdle

art	articular
brstg	branchiostegals
cerhy	ceratohyal
clt	cleithrum
cor	coracoid
dn	dentary
epi	epihyal
hyp	hypohyal
iop	interopercle
pec sp	pectoral spine
uro	urohyal

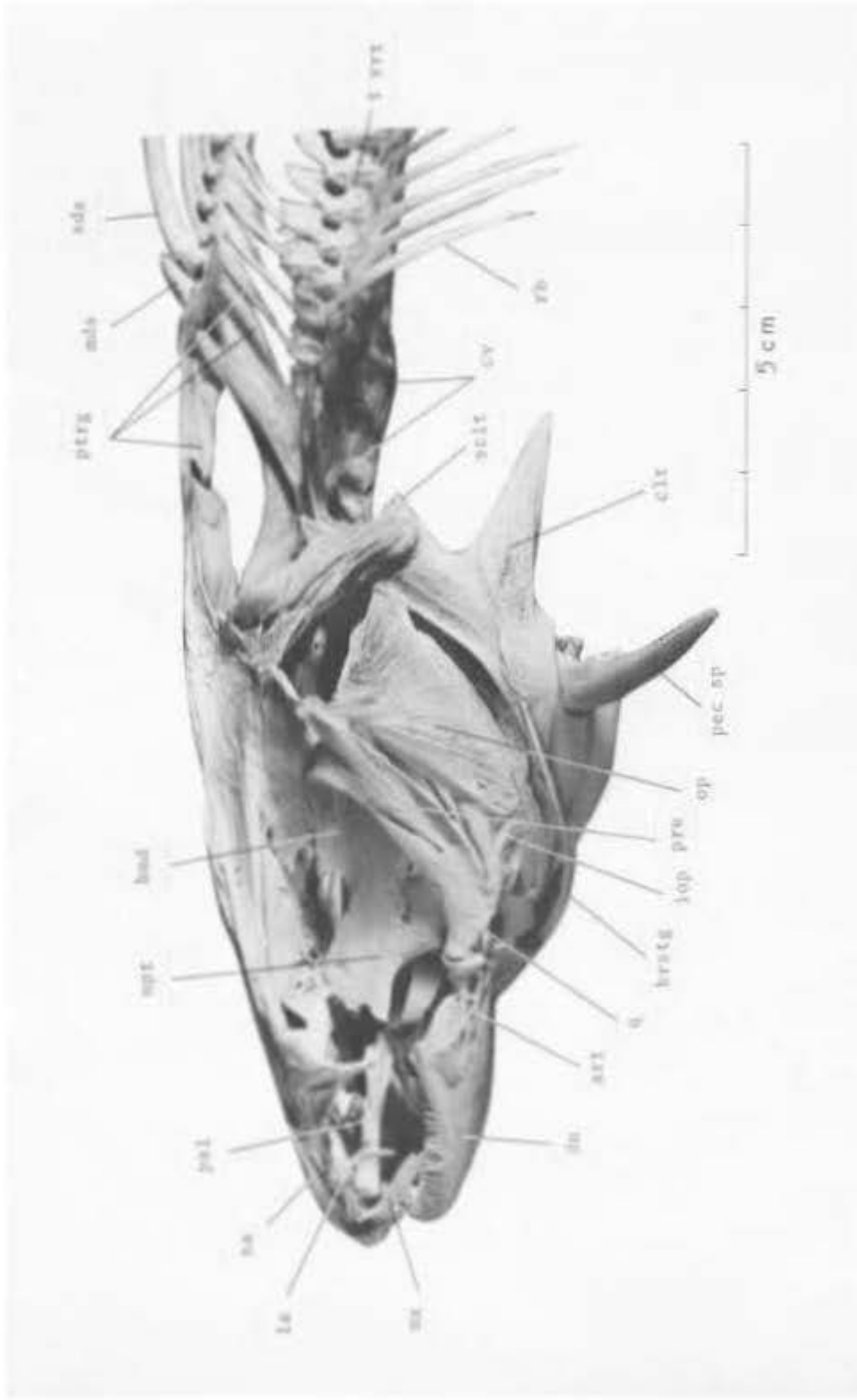


Figure 5. Lateral view of left side of anterior portion of skeleton.

Figure 6.

Individual elements (except extreme lower right) of
the Channel Catfish (left to right, top to bottom)

mpt	left metapterygoid (lateral view, posterior to right)
hmd	left hyomandibular (lateral view, dorsal to right)
pre	left preopercle (lateral view, posterior to right)
pal	left palatine (dorsal view, posterior at top)
mx	right maxilla (medial view, posterior to right)
iop	left interopercle (lateral view, posterior to right)
uro	urohyal (dorsal view, posterior at top)
q	left quadrate (lateral view, posterior at right)
pec sp	right pectoral spine (posterior view, proximal at top)
s ptrg	second pterygiophore (dorsal view, posterior at top)
mds	modified first dorsal spine (dorsal view, anterior at top)
ads	second dorsal spine (dorsal view, proximal at top)
f ptrg	first pterygiophore (ventral view, posterior at top)

Dorsal spine support and complex vertebrae
(extreme lower right)

tpcv	transverse process of complex vertebrae
------	--

other abbreviations as above

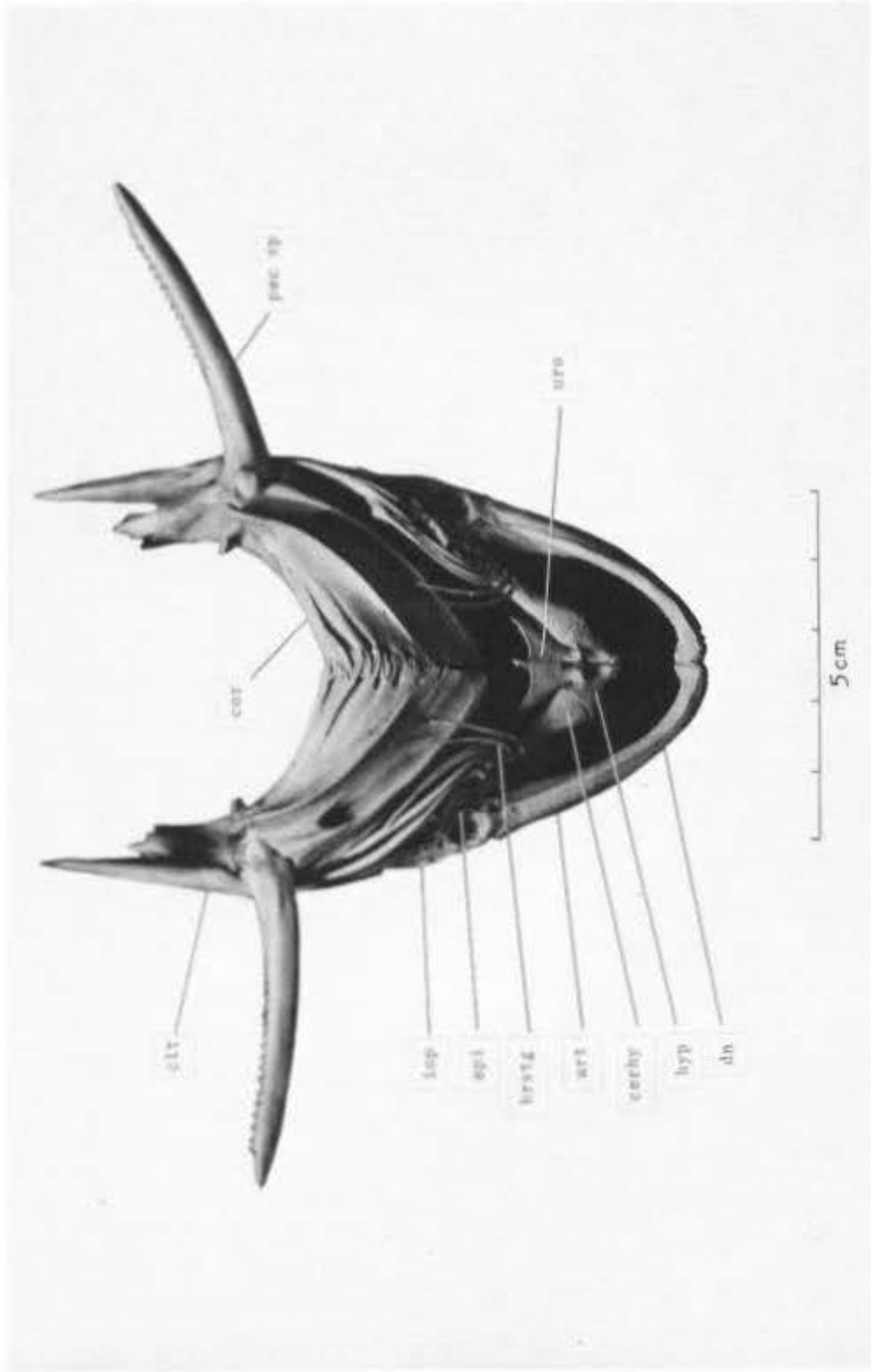


Figure 4. Ventral view of mandibles, hyoid bar and pectoral girdle.

Figure 5.

Lateral view of left side of anterior
portion of the skeleton

art	articular
brstg	branchiostegals
clt	cleithrum
cv	complex vertebra
dn	dentary
hmd	hyomandibular
iop	interopercle
la	lacrimal
nda	modified first dorsal spine
mpt	metapyerygoid
mx	maxilla
na	nasal
op	opercle
pal	palatine
pec sp	pectoral spine
pre	preopercle
ptrg	pterygiophores
q	quadrate
rb	ribs
scit	supracleithrum
ada	second dorsal spine
t vrt	trunk vertebrae

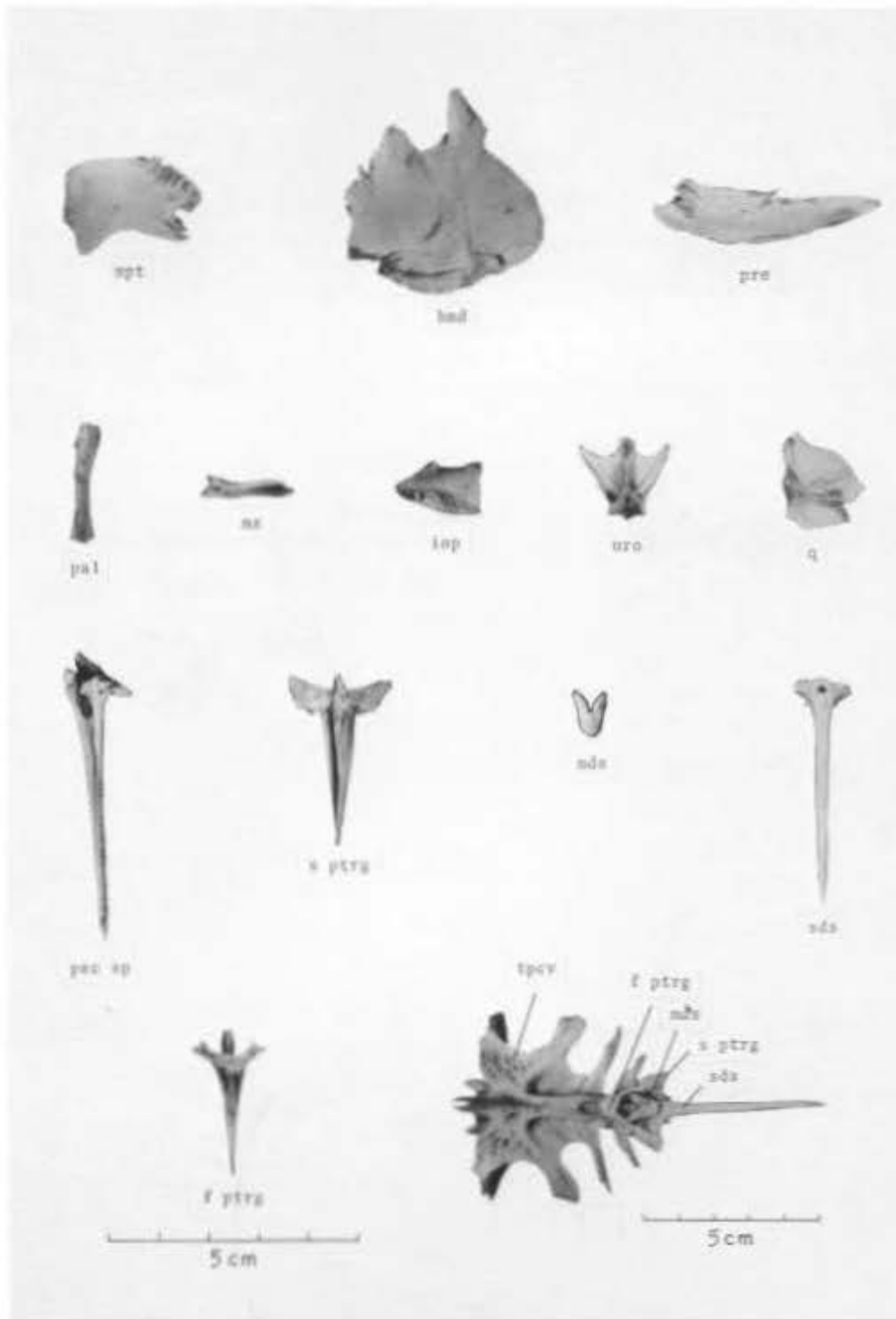


Figure 6. Individual Elements of the Channel Catfish.

Figure 7.

Individual elements of the Channel Catfish

bapt	right basipterygium
sclt	left supracleithrum (posterior view, dorsal to right)
op	left opercle (medial view, anterior to right)
clt+cor	left cleithrum + coracoid (posterior view, medial to right)
hyp	right hypohyal
cerhy	right ceratohyal
epi	right epihyal
dn	left dentary
art	left articular
an	left angular
clt	right cleithrum (posterior view, lateral to right)
cor	right coracoid (posterior view, lateral to right)

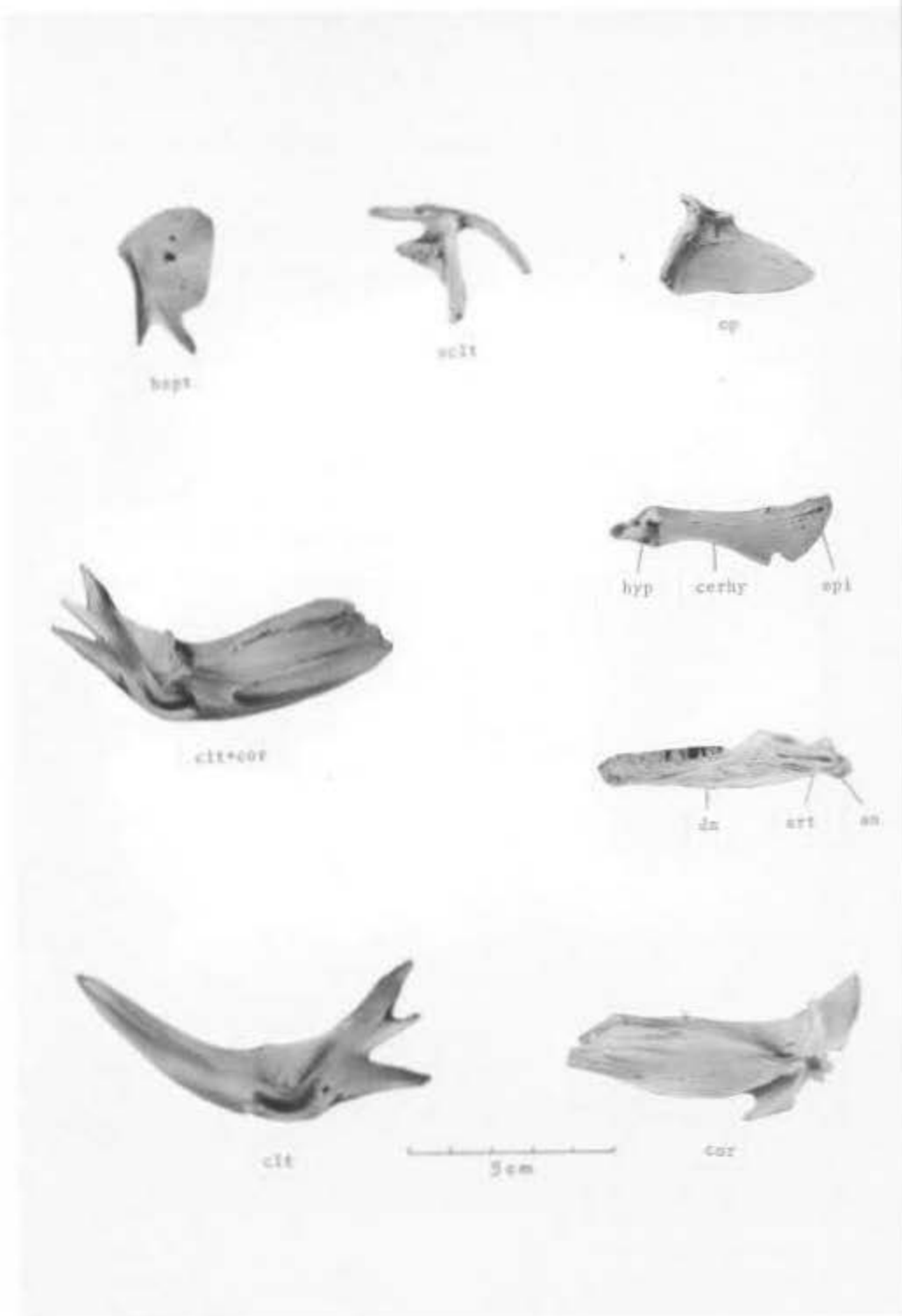


Figure 7. Individual elements of the Channel Catfish.

Figure 8.

Vertebrae of the Channel Catfish

- a. an anterior trunk vertebra
(posterior view)
- b. a posterior trunk vertebra
(lateral view)
- c. first caudal vertebra
(anterior view)
- d. a typical caudal vertebra
(lateral view)
- e. terminal vertebra
(lateral view, w/o upper hypurals)

Complete vertebral column of the
Channel Catfish posterior to the
complex vertebrae

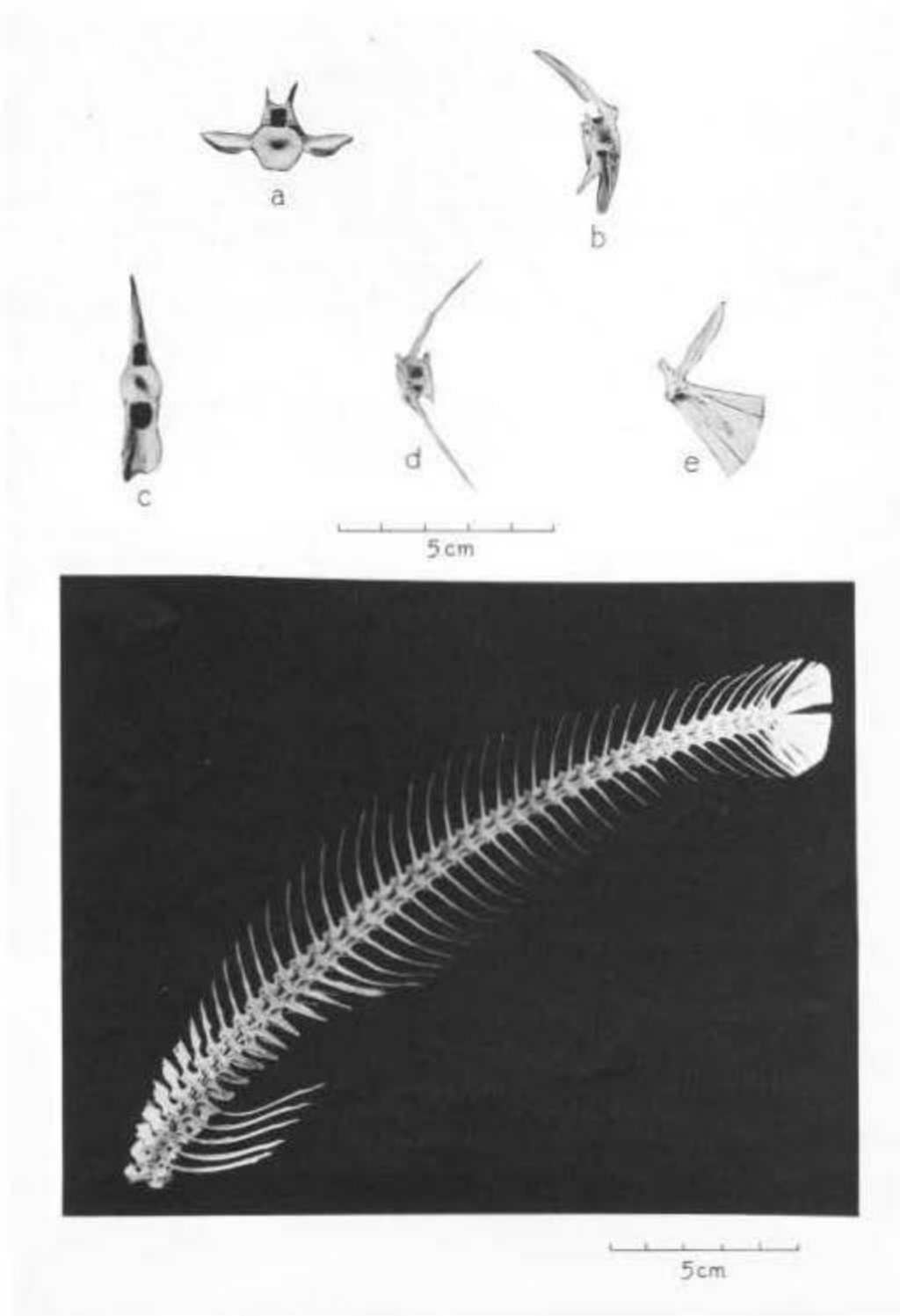


Figure 8. Vertebrates of the Channel Catfish.

REFERENCES CITED

- Gregory, William K.
1932 Fish skulls: A study of the evolution of natural mechanisms. *American Philosophical Society, Transactions* XXIII, Pt. II.
- Kindred, James E.
1919 The skull of *Amiurus*. *Illinois Biological Monographs* V, No. 1.
- Lundberg, John G.
1975 Homologies of the upper shoulder girdle and temporal region bones in catfishes (order Siluriformes), with comments on the skull of Helogeneidae. *COPEIA* 1:66-73.
- Olsen, Stanley J.
1968 Fish, amphibian and reptile remains from archaeological sites, Pt. 1: southeastern and southwestern United States. *Peabody Museum of Archaeology and Ethnology, Paper* LVI, No. 2.
- Starks, Edwin Chapin
1901 Synonymy of the fish skeleton. *Washington Academy of Sciences, Proceeding* 3:507-539.