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OCCURRENCE OF THE CHIMAEROID *ISCHYODUS BIFURCATUS* CASE IN THE CUSSETA FORMATION (UPPER CRETACEOUS, CAMPANIAN) OF WESTERN GEORGIA AND ITS DISTRIBUTION

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WE DESCRIBED a Late Cretaceous fish fauna from the Campanian-age Blufftown Formation in western Georgia (Case and Schwimmer, 1988), including 15 selachian taxa and 8 osteichthyans; however, at that time no chimaeras had been found in the region. A well-preserved specimen of *Ischyodus bifurcatus* Case, 1978, was subsequently collected from the same general locality described in the above study, but in the immediately superjacent Cusseta Formation. This is a note of the new occurrence of this fish and a summary of its known geographic and stratigraphic distribution (Appendix).

The locality of this report (Figure 1) is on the south bank of Hannahatchee Creek, a tributary of the Chattahoochee River in Stewart County, western Georgia. The site is at approximately 32°8′15″N latitude by 84°57′35″W longitude, 40 km south of Columbus, near the Georgia-Alabama border on the Chattahoochee River. The specimen was found 2 m above the lag deposit that demarcates the Blufftown-Cusseta formational contact (unit 4 in Schwimmer, 1986, and Case, 1987). The assigned age is mid-Campanian (see Case and Schwimmer, 1988, figs. 2, 3), based on associated *Exogyra ponderosa erraticostata* Stephenson and calcareous nannofossils including *Calculites obscurus* Deflandre and *Eiffelithus eximius* (Stover).

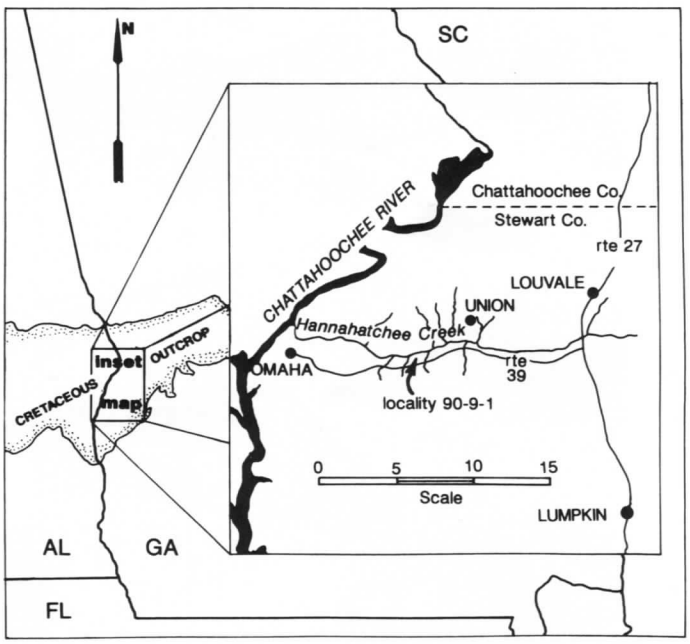

FIGURE 1—Location of collection 90-9-1, in bank of Hannahatchee Creek, Stewart County, western Georgia (scale in km). The specimen was collected approximately 2 m above mean summer stream level, within the lower 1 m of the Cusseta Formation.

SYSTEMATIC PALEONTOLOGY

Class CHONDRICHTHYES
Subclass HOLOCEPHALI Bonaparte, 1832–1841
Order CHIMAERIFORMES Patterson, 1965
Family CHIMAERIDAE Rafinesque, 1815
Genus ISCHYODUS Egerton, 1843
ISCHYODUS BIFURCATUS Case, 1978
Figures 2, 3.3

Ischyodus bifurcatus CASE, 1978, p. 21, Pl. 1, figs. 1–5; 1979, p. 226, Pl. 2, figs. 1–3.

Material.—CCK-90-9-1, a right mandibular toothplate.

Description.—Toothplate nearly complete, measuring approximately 8 cm diagonally (maximum length). Contains four tritorial areas: one with combined and bifurcated median and internal posterior tritors, individual external anterior and external posterior tritors, and anterior tritor at "beak" (apical dentine area of Gurr, 1963).

Discussion.—This is a typical representative of the species and is essentially indistinguishable from the type mandibular specimen from the Navesink Formation of Hop Brook, Monmouth County, New Jersey. Figure 3.1–3.3 shows a comparison of three right mandibular tooth plates of *Ischyodus* species: *I. dolloi* Leriche, *I. thurmanni* Pictet and Campiche, and *I. bifurcatus* Case. Fusion of the internal posterior and median tritorial elements in *L. bifurcatus* results in a compound tritor with its specifically diagnostic fish-tail (="bifurcate") appearance; this combined tritorial area also appears displaced relatively toward the symphysis as compared with the other species. Additional details on the size and arrangement of tritors readily distinguish among these three mandibles, as evident in Figure 3.1–3.3. Taxonomic characteristics of palatine and vomerine elements among

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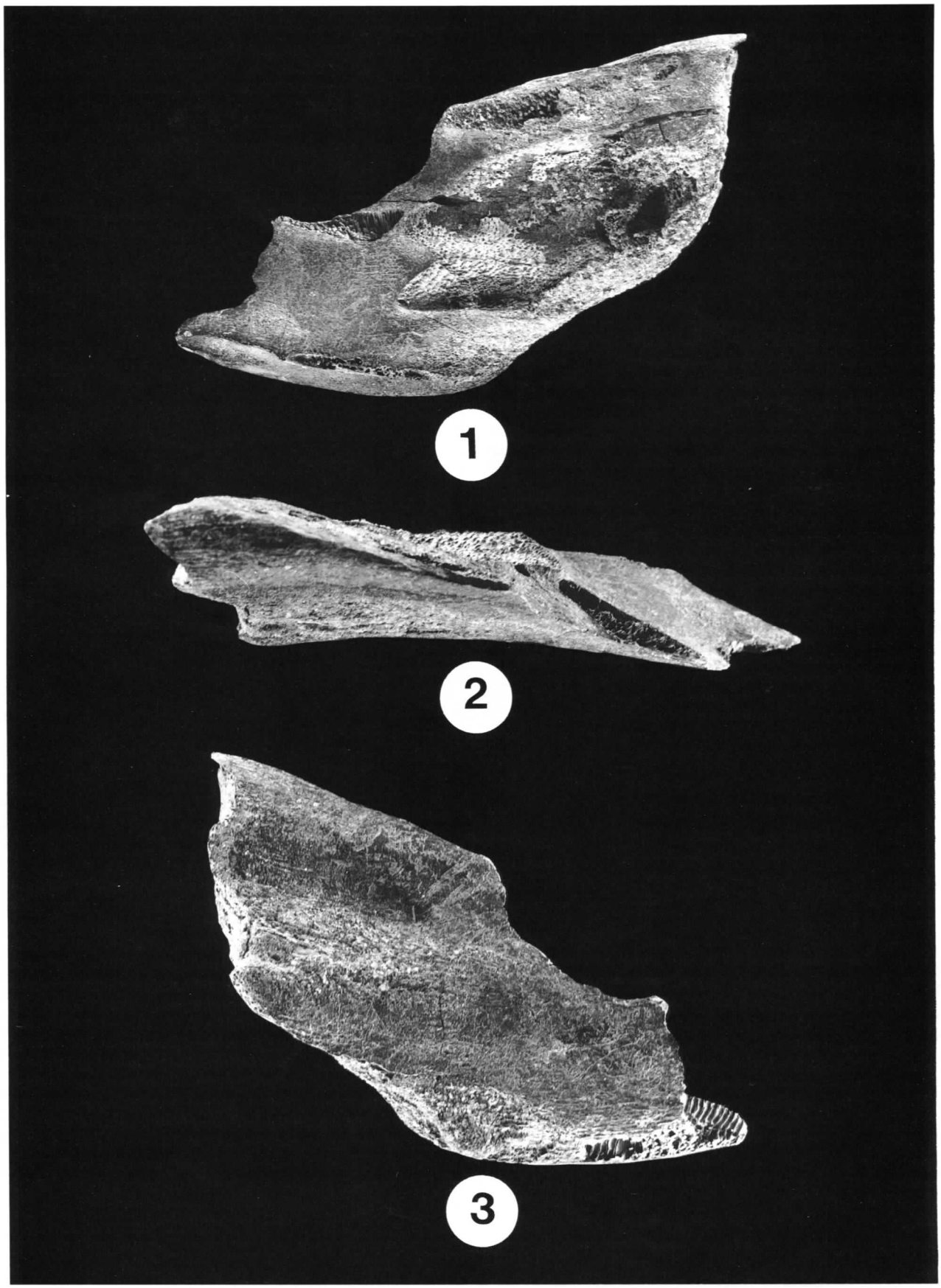
FIGURE 2—*Ischyodus bifurcatus* Case, CCK-90-9-1, right mandibular toothplate. *1*, internal view; *2*, dorsal view; *3*, external view; all ×1.5.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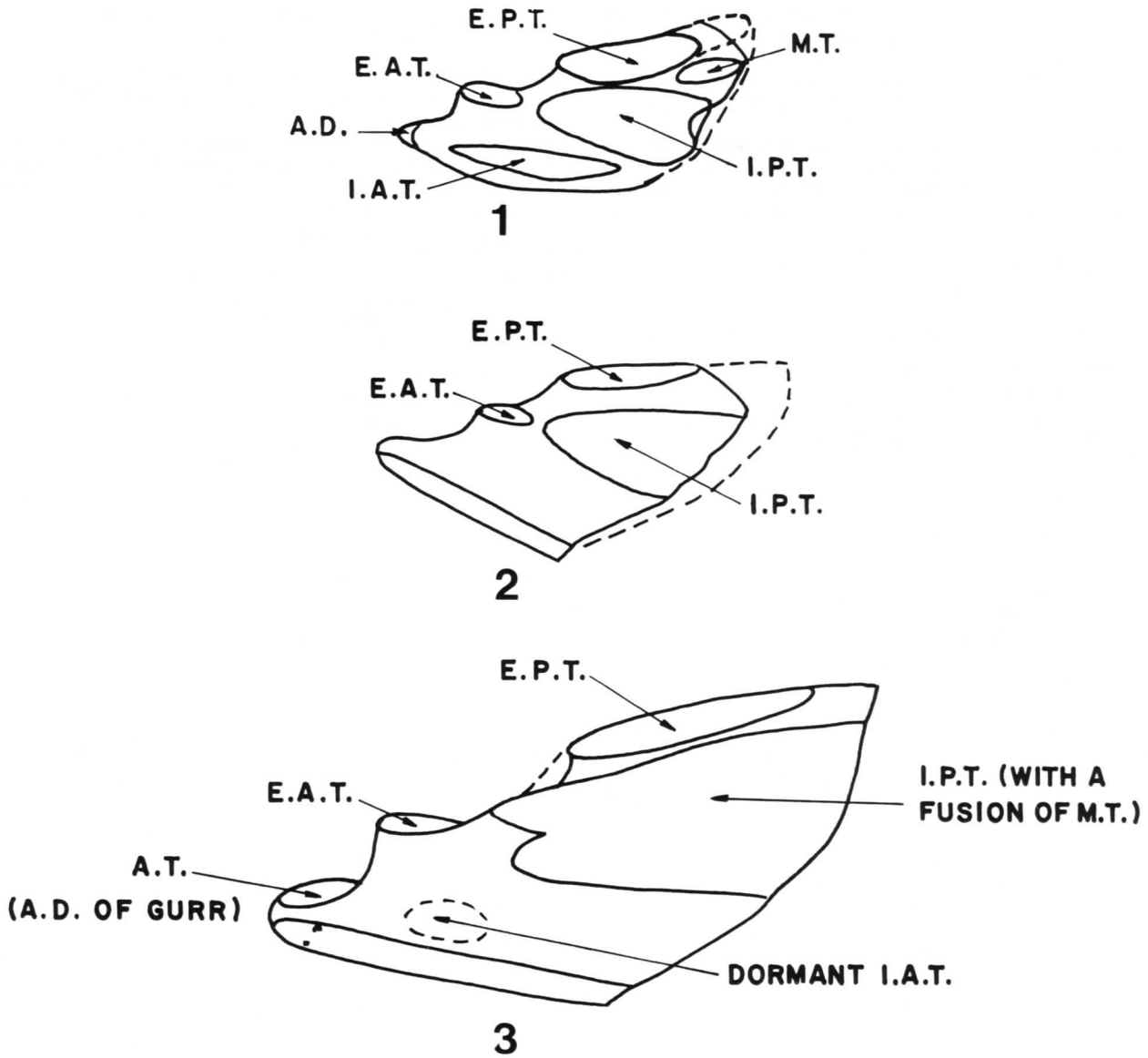

FIGURE 3—Comparison of right mandibular toothplates in three species of *Ischyodus*. *1, Ischyodus dolloi* Leriche; *2, I. thurmanni* Pictet and Campiche; *3, I. bifurcatus* Case; all ×1.2. A.D., apical dentine; A.T., anterior tritor; E.A.T., external anterior tritor; E.P.T., external posterior tritor; I.A.T., internal anterior tritor; I.P.T., internal posterior tritor; M.T., median tritor.

the three species are discussed in detail in Case, 1978; *Ischyodus bifurcatus* is also characteristically the largest of the three species.

Repository.—The specimen is cataloged and housed in the Cretaceous research collections at Columbus College.

ACKNOWLEDGMENTS

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APPENDIX
OCCURRENCES OF *ISCHYODUS BIFURCATUS* CASE

(arranged chronostratigraphically as determinable; data from Case, 1978, except as noted)

Late Santonian: Tombigbee Sand Member, Eutaw Formation, Tennessee/Tombigbee Dam site, Columbus, Lowndes County, Mississippi.

Late Santonian–early Campanian: Merchantville Formation, Chesapeake and Delaware Canal, St. Georges, New Castle County, Delaware.

Mid-Campanian: base of Cusseta Formation, Hannahatchee Creek, Stewart County, Georgia (this report); Woodbury Clay, Belmawr, Camden County, New Jersey.

Late Campanian: Teapot Sandstone Member, Mesaverde Formation, Worland, Washakie County, Wyoming; Judith River Formation, Blaine County, Montana; Marlbrook Marl, Arkadelphia, Clark County, Arkansas; base of Oburg Chalk (Cm2a), Havre, Belgium.

Late Campanian–early Maastrichtian: Fruitland Formation, San Juan Basin, New Mexico (Donald L. Wolberg, personal commun.).

Early Maastrichtian: Mount Laurel Sandstone, Hop Brook, Holmdel Township, Monmouth County, New Jersey.

Early–middle Maastrichtian: Navesink Formation, Monmouth County, New Jersey (numerous localities).

Ischyodus species other than *I. bifurcatus* are known to cross the Cretaceous-Tertiary boundary, ranging to strata as young as the late Paleocene (Case, 1991).