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# DESCRIPTION OF A NEW SPECIES OF HIPPOPOTAMUS

WITH FOUR PLATES

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# DESCRIPTION OF A NEW SPECIES OF HIPPOPOTAMUS

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Two skulls of *Hippopotamus* in the U. S. National Museum, one from the Zambezi River, the other from Angola, differ noticeably from each other in important details of form. Hitherto the exact value of these characters could not be determined, owing to lack of material to illustrate the normal variation in individuals from one locality. The series of eight skulls from British East Africa collected by the Smithsonian African Expedition shows conclusively that individual variation in this genus is not unusually great, and that the Zambezian and Angolan specimens must be regarded as representing distinct species. In all essential characters the Zambezian skull agrees with those from British East Africa; these are for the present assumed to represent true *Hippopotamus amphibius* of the upper Nile.<sup>1</sup> The Angolan animal may be known as:

## HIPPOPOTAMUS CONSTRICTUS, sp. nov.

*Type*.—Skull of immature male ( $m^3$  not fully in place), number 34787, U. S. National Museum; collected in Angola, Africa, by H. Chatelain.

*Diagnosis*.—Skull in general like that of *Hippopotamus amphibius*, but rostral constriction deeper, dorsal surface of cranium more flattened, difference in level between anterior border of maxillary and of premaxillary more pronounced, and mandibular symphysis much shorter, its median length less than one-third length of mandible; teeth smaller than in *Hippopotamus amphibius*, the transverse diameter of  $m^2$  scarcely more than one-half that of palate.

*Skull*.—The skull is throughout less robust than that of *Hippopotamus amphibius*, a peculiarity equally noticeable in dorsal, ventral, or lateral aspect; depth at level of anterior border of orbit contained about 4 times in condylobasal length, instead of  $3\frac{1}{2}$  times, as in *H. amphibius*; rostral constriction very pronounced, its least

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<sup>1</sup>This paper is the seventh dealing with the results of the Smithsonian African Expedition.

breadth contained nearly 7 times, instead of about 5 times in condylobasal length; anterior portion of rostrum less expanded than in *H. amphibius*, the ratio of breadth across canines to zygomatic breadth about 77, instead of about 88; form of rostral expansion differing from that of the related species in the less forward extension of maxillaries, so that level of canines is noticeably further behind that of anterior incisors, and the bases of the three teeth of each side lie nearly in a straight oblique line; occipital region and dorsal surface of orbits much less elevated above level of median portion of frontals than in *H. amphibius*, the vertical diameter of orbit not conspicuously greater than transverse diameter; mandible with posterior portion less developed, both longitudinally and vertically, than in the related species, the ratio of height through coronoid process to length (from articular process to front of alveolus of canine) about 60, instead of about 65; posterior border somewhat flattened immediately below articular process, the region of its greatest convexity at level of middle of ramus, rather than above middle; symphysis both shorter and narrower than in *H. amphibius*, the longitudinal trough on its upper surface less well defined, the hinder border opposite front of middle premolar instead of front of posterior premolar, the ratio of median length of symphysis to length of mandible (from articular process to front of alveolus of canine) about 27, instead of about 35.

*Teeth.*—The teeth are essentially similar to those of *Hippopotamus amphibius*, except that they are relatively smaller (transverse diameter of  $m^1$  scarcely more than one-half that of palate); the crowns of the molars are narrower, and the outward curve of maxillary series behind premolars is more pronounced.

*Measurements.*—Cranial measurements of type (millimeters): Condylobasal length, 690 (730);<sup>2</sup> zygomatic breadth,  $435 \pm (435)$ ; rostral constriction, 110 (144); rostral expansion, 332 (370); occipital breadth, 278 (332); occipital depth (to basion), 196 (214); median depth between orbits, 181 (208); nasal, 390 (400); height of orbit, 75 (90); width of orbit, 70 (65); elevation of orbit above level of forehead, 24 (40); mandible (condyle to front of alveolus of canine), 587 (620); coronoid height, 355 (410); canine width 385 (403); length of symphysis (without median spine), 168 (224); maxillary toothrow (alveoli), 265 (258); mandibular toothrow, 293 (286); first upper molar,  $44.7 \times 41.3$  ( $45.5 \times 45.5$ ); second upper

<sup>2</sup> Measurements in parentheses are those of the adult male Zambebian skull (No. 123387).

molar, 53.4 x 45.4 (51.0 x 50.8); first lower molar, 46.2 x 31.0 (51.4 x 33.8); second lower molar, 59.0 x 35.4 (57.0 x 38.6); width of palate at anterior lobe of  $m^1$ , 68.2 (76.2).

*Remarks.*—At present there appear to be three well-marked species of *Hippopotamus* recognizable among the living members of the genus: (a) True *Hippopotamus amphibius*<sup>3</sup> of eastern and north-eastern Africa, (b) *H. constrictus* of Angola, and (c) *H. australis*<sup>4</sup> Duvernoy of the Cape region. The last I have not seen, but, so far as can be judged from the descriptions of Desmoulins and Duvernoy, it is a form in which the flattening of the cranium is carried even further than in *H. constrictus*, the orifice of the orbit is wider than high, and there are certain important peculiarities in the interrelations of the upper and lower canines, and in the form of the anterior cheek-teeth.

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<sup>3</sup> Synonymy:

1758. *Hippopotamus amphibius* Linnaeus, Syst. Nat., I, 10th ed., p. 74 (Nile).

1846. *Hippopotamus typus* Duvernoy, l'Institut, XIV, p. 333. October 7, 1846 ("Senegal or Abyssinia").

<sup>4</sup> Synonymy:

1846. *Hippopotamus australis* Duvernoy, l'Institut, XIV, p. 333. October 7, 1846. (Previously described but not named by Desmoulins, Journ. Physiol. Exp. et Path., V, p. 354. October, 1825.)





HIPPOPOTAMUS AMPHIBIUS. ZAMBEZI RIVER

HIPPOPOTAMUS CONSTRICTUS. TYPE







HIPPOPOTAMUS AMPHIBIUS. ZAMBEZI RIVER  
HIPPOPOTAMUS CONSTRICTUS. TYPE





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HIPPOTAMUS CONSTRICTUS. TYPE