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Are there Pygmy Elephants?

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Introduction

In this volume three papers have argued that there are two species of African elephant: the Bush Elephant (*Loxodonta africana*) and the Forest Elephant (*Loxodonta cyclotis*). Nonetheless, it is probably true to say that there is a significant minority of authors who believe that there is a third species in Africa, a pygmy species that lives only in the depths of the rainforests of Central Africa. The evidence for pygmy elephants was recounted by Heuvelmans (1959) and updated by Roeder (1970, 1975). Significant contributions in more recent times have been by Western (1986), Redmond (1987), Eisentraut and Böhme (1989) and Böhme and Eisentraut (1990). Yet the matter remains controversial.

The Grubb/Groves craniometric dataset includes measurements of all the meaningful specimens that have contributed to the debate. This series of papers on Bush and Forest Elephants seems a good opportunity to comment on the pygmy elephant question from the perspective of actual hard data.

A brief history of pygmy elephants

It is as well to remind ourselves that the Forest African Elephant did not become known to science until the beginning of the 20th century, in a paper by Matschie (1900). In this paper, Matschie actually described three supposedly new elephant species: *Elephas cyclotis*; *Elephas* (*Loxodonta*) *oxyotis* from the upper Atbara River in Sudan, and *Elephas (Loxodonta) knochenhaueri* from Barikiwa in southern Tanzania. The type specimen of *cyclotis* was a male from Yaunde, in southern

Cameroon, living at that time in the Berlin Zoo. From their localities, as well as from my examination of their skulls, the other two presumed species are Bush African Elephants.

Uncertain of whether African elephants should be separated from Asian elephants in a separate subgenus, and apparently even under what name the typical [South African] form of the African elephant should be known, Matschie added that one might prefer to call the first of these *Elephas capensis cyclotis* or *Elephas (Loxodonta) cyclotis*, and the other two *Elephas africanus oxyotis* and *Elephas africanus knochenhaueri*. The rules of nomenclature specify that, if we want to cite the author and date of a scientific name, we place the author and date in parentheses after the name if we place the species or subspecies in a genus different from the one which the original author did [cf. Article 51(c) in International Commission on Zoological Nomenclature, 1985]. In this case, as Matschie ascribed *cyclotis* to the genus *Elephas,* but we today place it in a different genus, *Loxodonta*, the full citation of the scientific name of the Forest African Elephant is *Loxodonta cyclotis* (Matschie, 1900).

The first presumed pygmy elephant was a young female in Hamburg Zoo, caught at Njole in Gabon, described as *Elephas africanus pumilio* by Noack (1906). At an age estimated (by the zoo's director, Carl Hagenbeck) to be about 6 years, this female was the same size as the types of Matschie's *cyclotis* and *oxyotis* (both living in Berlin Zoo), which, from photos published in a popular book some years before, Noack judged to be a mere one and a half years old; as further guarantee of her age, he noted that her tusks were already 12 cm long, whereas in the type of *cyclotis* they were only just beginning to emerge (and in the type of *oxyotis* none were visible). He recognized, however, that the Hamburg female was similar in some respects to *cyclotis*, though her ears were smaller.

This female, the living type specimen of *pumilio*, was, even as Noack was describing her, transferred from Hamburg to New York, where she (under the name "Congo", Fig. 1) was at first identified as an example of *cyclotis*, and later, when her important status was realized, exhibited as *Elephas pumilio* (no longer a subspecies of *E. africanus* but a full species!). Schouteden (1911a) reported on her continued growth, as communicated to him by the New York Zoo's director, Hornaday. In July 1905 she had been 111.7 cm high and weighed 272 kg; by July 1911 she had grown to 152.4 cm in height and 770 kg in weight. Morrison-Scott (1947) says that at her death, in 1915, she was 203 cm in height.

Schouteden (1911b) described a second pygmy elephant, *Elephas africanus fransseni*, from Mpaa, on Lake Mai-Ndombe (at that time called Lake Leopold II) in Democratic Republic of the Congo (DRC), the former Zaire. The type specimen, said to have been one of the largest in the herd, was 166 cm at the shoulder.

Other elephants identified as pygmies, including some zoo animals and some reports from the wild, were mentioned by Morrison-Scott (1947) and Pfeffer (1960), who did not believe in the existence of a pygmy species, and by Heuvelmans (1959), who did. Roeder (1970) gave comparative tables of measurements for what he identified as ordinary Forest Elephants and as the Pygmy species, and later (Roeder, 1975), he described some presumed pygmies from Cameroon. Especially interesting is his table 4 (Roeder, 1970, p. 207) in his 1970 paper, giving the shoulder heights of Forest Elephants captured at Api, in Garamba National Park, DRC, and all of known age. Nine females, 27 years old or more, stood 215-240 cm high; one aged 24-25 was 205 cm; and one aged 19 was 201 cm. Four males, all 27 to 29 years old, were 228-238 cm, and his table 2 (Roeder, 1970, p. 206) records that a

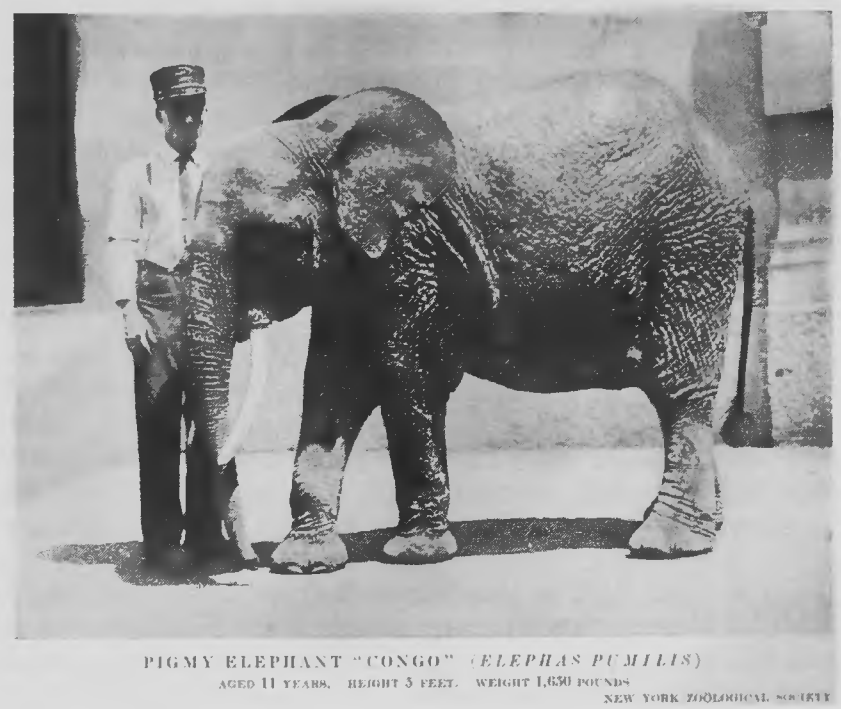

Figure 1. A photograph of "Congo", a female Forest African Elephant, the type of "*Elephas pumilio*", now classified as *Loxodonta cyclotis*.. Note round shape of ear, hence the name ("cycle"=round, "otis"=ear) [after Kunz, 1916, between pages 384 and 385; reprinted with permission from the New York Zoological Society].

17 year old male from Gangala na Bodio was 220 cm high and a 14 year old was 205 cm, while four 9-10 year old females from Gangala and Api were 174-208 cm.

Most recently Eisentraut and Böhme (1989) discussed the question, giving photos of apparently mature bulls of Forest and Pygmy Elephants, and of skulls of the two in the Central African Museum, Tervuren, and frames from a film of a wild pygmy elephant, apparently one of a herd. The following year (Böhme and Eisentraut, 1990) followed this up with photos of presumed pygmies in a private zoo in Liberia (but apparently caught in Congo) and of a wild herd (females and young) in forest photographed by Ambassador Harald Nestroy in the northern Likouala region on the border between Congo/Brazzaville and the Central African Republic. The size of the wild ones could be deduced from the presence in the same photos of a Great White Egret. If this egret is 1 meter high, then the adult elephants, which are shown walking in front of it, would be about 150 cm high. Later, he photographed four much larger elephants in the same clearing, with a Red Buffalo conveniently present as scale. Greenwell (1992, 1993) considered this evidence conclusive of the real existence of a Pygmy species.

Skulls of Pygmy Elephants

It should be noted that the skull of the type of Matschie's *cyclotis* is in the Berlin Museum. It is a male with both third and fourth molars in the jaw (our dental eruption stage 4), interpreted as about 10 years old. Unfortunately, it is not known when he died, thus his age in the photograph seen by Noack (1906) is not clear. The skull length is 590 mm. There is no overall difference in size between stages 4 and 5; the lengths of nine other skulls of these two stages vary from 470 to 630 mm, thus it is on the large side for its age.

A skull in the American Museum of Natural History (New York, New York USA), AMNH 90102, a young female from the zoo and ultimately from the Fernan Vaz district, Gabon, may be that of "Congo", hence the type of Noack's *pumilio*, or it may be that of "Josephine", a second supposed pygmy who was in the same zoo in the 1920s. AMNH 90102 shows all the features that distinguish *L. cyclotis* from *L. africana*. It is not possible to detect its dental eruption stage, but it is certainly quite immature. If it is Congo's, and if Congo really was 6 years old in 1905, and 16 years old when she died in 1916, then we would expect her to have the fourth molar in wear, as in dental eruption stage 5 (Groves and Grubb, 2000). The skull is 535 mm long. Ten female *L. cyclotis* skulls of stages 4 and 5 (which are similar in size, as are those of the males) range from 489 to 568 mm. Thus, if the skull is the type of *pumilio* then it is towards the upper end of the range of *L. cyclotis* of presumed equivalent age.

The type skull of Schouteden's *fransseni* is still in the Tervuren Museum. Its catalogue number is MRAC 3396, a female with the fifth molar in wear (our dental eruption stage 7), and so aged somewhere between 20 and over 30 years of age. It, too, is, in all diagnostic features, a typical skull of *L. cyclotis*. It is 544 mm long. The lengths of 23 *L. cyclotis* skulls of stages 6 and 7 (which do not differ in size) are from 510 to 619 mm (all but three being below 600 mm). Thus, the type of *fransseni* is of typical size for its age, perhaps somewhat on the small side.

The skull figured by Eisentraut and Böhme (1989) as that of a pygmy elephant is likewise in the Tervuren collection. It is MRAC 9524, from Moma, 1°25'S, 23°57'E, in southern DRC; a very aged female, with 6th molars nearly worn out or, in one case, actually lost (i.e., dental eruption stage 9), probably over 60 years old. It, too, is, in its essential features, a skull of *L. cyclotis*. It is 574 mm long; the skulls of eight acknowledged *L. cyclotis* of stage 9 vary from 588 to 706 mm; this skull is the smallest of the adult females we have seen. Consequently, we cannot find that the skulls assessed as those of Pygmy Elephants are anything but specimens of *L. cyclotis*, the Forest African Elephant.

Other evidence

The evidence of measured body sizes does not support the Pygmy Elephant concept. The female Congo, the type of *pumilio*, was 203 cm high at death which is about the same size as a 14 year old female from Garamba, as tabulated by Roeder (1970); if she was indeed 15 years old when she died, this would be exactly right for a female *L. cyclotis* of the same age.

The height of the type of *fransseni* was given as 166 cm. This is way below the figures for females of *L. cyclotis*, and seems not to match with the evidence of the skull (above). We take leave to question whether the measurement, taken under avowedly difficult conditions, is accurate. Certainly in the photos reproduced by Schouteden (1911b, plate 11), the elephant looks as if it was taller than Lieutenant Franssen.

The evidence of Ambassador Nestroy's photos (taken in May 1982) is less clear-cut than it at first appears. In the photo of the group with the egret (Abb. 7), in which young elephants are present, the position of the egret, though obviously behind the lead female, is not at all clear; how much of the body and neck are to be seen in the photo, hence how big (relative to the elephants) the egret actually is, is not as obvious as it might seem. The age of the larger elephants is likewise not known. The photo with the buffalo (Abb. 5) evidently shows only mature males. We are, therefore, comparing herd females, of uncertain size and in any case not necessarily full-grown, with non-herd (breeding) males.

Part of the problem seems to be that many commentators are unfamiliar with the (perhaps rather bizarre and idiosyncratic) growth patterns and social structure of elephants. Elephants grow throughout life, even females, though males much more. Elephant herds are matriarchies. The consequences of these two facts are as follows: (1) females of different ages will be of substantially different sizes, and if the matriarch has died there may well be no extremely large females in the herd; (2) a herd which contains calves will almost certainly contain no mature (breeding-age) males; (3) a group of bulls will be fairly young but mature, so of relatively large size [perhaps related to precocity]; and (4) a bull seen on its own will probably be old, hence of very large size.

Conclusions

All the evidence so far presented in the literature agrees with these precepts. Based on data we collected, we cannot find evidence for the existence of a pygmy species of elephant. The skulls we examined, purportedly those of Pygmy Elephants, are specimens of the Forest African Elephant, *Loxodonta cyclotis*.

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