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ABSTRACT: A recent study of mitochondrial DNA evidence of modern Eritrean elephants has resulted in the bold assertion that the Ethiopian elephants used by Ptolemaic Egypt were the larger bush elephants rather than a now-extinct North African population of the smaller forest elephant. If this was indeed the case, Ptolemaic use of at least some bush elephants could have important implications for the so-called ‘battle of the elephants’ at Raphia in 217 B.C. This brief article seeks to temper these claims through a close inspection of the ancient literature pertaining to elephant size, and Polybius’ account of Raphia in particular.

Keywords: Achaemenids, Persia, Chiliarch, Apple Bearess, Kinsmen Cavalary

It is generally thought that only two elephant species were used by the various ancient civilizations around the Mediterranean for military purposes, or for spectacles. The largest of these was indubitably the Indian or Asian elephant (*Elephas maximus*), while the smaller is usually held to have been a now-extinct North African population of the forest elephant (*Loxodonta cyclotis*), now found mainly in the equatorial regions of Africa – or at least an animal of similar size and general appearance to the forest elephant. This has been the prevailing stance since the 1950s, when Gowers and Scullard determined that the view of the ancients that the Indian was the largest of the known elephant species was not as inaccurate as some had previously supposed. Rather, it was their contention that the bush or savannah elephant (*Loxodonta africana*), the largest of the extant elephant species, was all but unknown to the ancient Mediterranean world, and that the African elephants described by the authors of antiquity must have been forest elephants. Such a determination ostensibly explains ancient

* Journal abbreviations follow *L’Année philologique*. Other abbreviations are as per *OCD*, with the exception of Lewis & Short = C. T. Lewis and C. Short, 1879, *A Latin Dictionary*, Oxford. All translations, unless noted otherwise, are from the relevant Loeb Classical Library edition. I would like to thank *Historia*’s two anonymous reviewers for suggesting ways to improve the argument contained herein. Dr Philip Rance must also be thanked for commenting on an earlier draft and allowing me to avoid some significant errors, while Ms Cinthya Paredes Castillo’s assistance in preparing the map was invaluable.

1 On the initial capturing of forest elephants by Carthage, see Gowers 1947, 43; Scullard 1948, 159. Scullard (1974, 63) later added, with more conviction, that the ancients “did not handle the massive African elephants”. Glover (1944, 267) considered the possibility of forest elephants being used by the various Mediterranean powers, but rejected it on the basis of Punic coins that, according to him, fail to show “the low posture of the head, and the perpendicular carriage of the tusks” associated with forest elephants. But this is debatable, for the large size of the mahout on the animal’s back suggests a beast significantly smaller than an Indian elephant, let alone a bush elephant. As Wise (1982, 9) observes, “[the size of the rider] … helps us to visualise the smallness of the Carthaginian elephant”; see also Charles 2008a, 344.
statements that: a) Indian elephants are bigger than their African counterparts (see, e.g., Diod. 2.35.4; Philostr. VA 2.12.1; Strab. 15.1.43), and b) that Africans were afraid of Indian elephants when they met them in battle (see, e.g., App. Syr. 31; Diod. 2.16.4; Livy, 37.39.13; Sol. 25.8).\(^2\) The *locus classicus* on elephant size, of course, is Polyb. 5.84.5–6, which deals with the battle of Raphia, waged in 217 B.C.\(^3\) Here, the smaller African elephants of Ptolemy IV, save for a few brave beasts, refused to fight the larger Indian elephants of Antiochus III. So, the general consensus is that only the Indian and African forest elephant (or something very similar in size) were known to the ancient Mediterranean world, with the latter having populations in: a) Mauretania, Numidia and Libya, which beasts supplied the armies of Carthage and Numidia; and b) in the land of the Trogodytae and Ethiopia, which animals supplied the armies of Ptolemaic Egypt.\(^4\) That the elephant’s mahout or driver could be described as an ἰνδός or, literally, “Indian”, has long been accepted as having no bearing on determining what species of elephant an ancient author is describing, although, in the case of Polybius’ description of Raphia, mahouts are not specifically indicated.\(^5\)

\(^2\) Note that Solinus (25.8), writing at some time in the third century A.D. and appearing to borrow much on elephants from Pliny, refers to elephants from Mauretania: *Indicos elephants [elephanti] Mauretani timent*. On the size of Indian elephants, see Ael. DNA 13.8 (possibly from Megasthenes, as per Müller *FHG* II, 434, although Jacoby *FGrH* IIB does not list it; cf. Schwanbeck 1966, where it is recorded as fr. 52.4). At this *locus*, Aelian asserts that Prasian beasts are the largest found in India, with those from Taxila being the second biggest. Larger again are those animals from Taprobane (modern Sri Lanka), which are also credited as being the most intelligent; see Ael. DNA 16.28. Pliny (*HN* 6.81) tells us that his information on the size of Sri Lankan elephants comes from Onesicritus, who served under Alexander the Great. Ancient views on elephant size cohere with a general view, followed, for example, by Pausanias (8.29.4) and Pliny (*HN* 7.21), that India produces the largest animals and plants. Diodorus (2.35.4) makes the interesting assertion, based probably on Megasthenes according to Jacoby (*FGrH* IIB, 474), that Indian elephants are bigger and more powerful than Africans because they have a far richer diet, which suggests that the apparent morphological differences between Indian and African differences were not of great moment to the ancients – differences were because of diet, not because they were distinct species. Cf. the very similar Diod. 2.16.4, which is likely to come from the same source, as per Rance 2009, 105, n. 60; see also Scullard 1974, 60, with 246, n. 29.

\(^3\) On elephants at Raphia, see especially Scullard 1974, 142–143; Charles 2007, 306–311, with references to earlier literature.

\(^4\) On this, see Charles 2008a, 348, n. 50; id. 2014a, 115; Kistler 2006, 135; Rance 2009, 106; Sidebotham 2011, 53; Zeuner 1963, 280–282, 292. Sabin (2007, 420) specifically mentions the presence of the ‘small forest variety’ at Raphia, as do Walbank (1957, 614) and Carrington (1959, 182). Charles/Rhodan (2007, 364) state that ‘The ancients almost certainly never used … elephants … for combat duty’. Appian (*Pan. 9*) refers to Carthage capturing elephants in northern Africa. Some, however, contend that the smaller African elephants found in North Africa in antiquity were the hypothetical *Loxodonta africana pharaohensis*; see Yalden et al. 1986, 46. The same authors (46–47) also refer to the ‘small Somali-arid Elephant *L. a. oreoensis*’ existing ‘To the east of the Webi Shebeli and in northern Somalia’, and that it ‘did not extend north of the Chercher highlands’. At the time of writing, ‘The only representatives of this race … are found in the area to the south of Harar and appear to undertake seasonal migrations along the Erer, Dacata and Fafan Valleys, between the headwaters of these rivers and the environs of Imi on the Webi Shebeli’ (52). In short, these areas are not close to modern Eritrea. Frade (1955, 780) more roughly places this supposed sub-species in the horn of Africa (in the very north of Somalia), and places *aeyotis* closer to the area of interest to us. Deraniyagala (1955, 117) clearly erred when he suggested that the Ptolemaic African elephants came from ‘the Atlas mountains’. Other studies do not distinguish between the sub-species identified by previous authors; see Bolton 1973, 573 (simply *Loxodonta africana* in Ethiopia).

\(^5\) See, e.g., Charles 2008a, 341; de Beer 1939, 93; Gowers 1937, 43; Lanuey 1949, 587; Prevas 1998, 61. For example, Polybius describes Carthaginian mahouts as Indians at 2.40.15, 3.46.7 and 3.46.11.
At this point, it will be worthwhile to recall how different the three extant elephant species are, especially since size will be the focus of much of this inquiry. The forest elephant, now largely confined to the equatorial regions of Africa, is the smallest of the living elephant species. An adult bull forest elephant can reach a height of around three metres at the shoulder, while its significantly larger bush elephant counterpart reaches a height of some four metres at the same point. More significant than height, perhaps, is that the adult male bush elephant can be almost double the weight of its smaller cousin. Both forest and bush elephant are broadly similar in appearance, being characterized by a concave back, a flap of skin between the stomach and hind legs, and very large ears, with those of the forest elephants perhaps being a little smaller relative to its body. The Indian elephant, although reaching a height at the shoulder somewhere between the two African species, i.e., three and a half metres, can weigh almost as much as the massive bush elephant. It looks rather different, too, with its large dome-like head and harkedly convex back being the most recognizable characteristics. Of particular note is that a much greater degree of sexual dimorphism occurs with the Indian elephant compared to the two African species. Some adult females can weigh only half as much as adult bulls, something which would surely have implications for their use in war.

Despite the prevailing view that the large bush elephant was unknown to the ancient Mediterranean world, recent nuclear and mitochondrial DNA evidence of a surviving population of African elephants in modern Eritrea, a location more or less comparable to ancient 'Ethiopia', has suggested that the elephants sourced by the Ptolemies from Ethiopia were, in fact, the very large bush elephant, and not an ancient population of something approaching the size of a forest elephant. It is important to provide a summary of this scientific research, which was initiated in order to determine the relationship of the existing population of Eritrean elephants to other African elephant populations, and to establish the degree to which genetic variation exists within the population in question. The research has resulted in some very bold claims, particularly with respect to the use of elephants in antiquity. For example, the authors, with reference to the work of Gowers, together with Polybius’ account of Raphia (5.84–85), postulate that the general view that bush elephants were not used for military purposes in antiquity is inaccurate. The same researchers, who generally assume a continuity between ancient elephants populations and those found today, contend that “Because African savannah [i.e., bush] elephant are larger than Asian elephants, some writers were led to conclude that the elephants used by Ptolemy could have been

6 On the size of the three elephant species, see Shoshani 1992, 40.
7 Brandt et al. 2013. Note that Walbank (1957, 614) holds that Ptolemaic African elephants, which he thinks were “of the ‘forest’ type (Loxodonta cyclotis)” came “from the Eritrean plateau”; see also Cary 1949, 206. Scullard (1974, 62) claims that the elephant type used by Ptolemies “reached to the Red Sea and the Gulf of Aden, where the very few surviving elephants are very small”. So, there has been a view that elephants surviving in the area until comparatively recent times might have had some forest elephant admixture.
8 See Gowers 1948.
African forest elephants ..., which are smaller than savannah elephants". The general implication of the genetic research, then, is that the belief that a) the Ptolemaic war elephants were smaller than the Indian beasts of their Seleucid rival, as per Polybius’ account of Raphia, is unfounded, and b) that the Ptolemies used the bush elephant, which is in fact somewhat larger than the Indian. This postulation returns us to the view of early-twentieth-century scholars such as Delbrück, Bevan and Tarn, who all criticized Polybius’ treatment of the elephant encounter at Raphia, and determined that he had inaccurately reported the size of the contending Ptolemaic animals.

Let us now turn to the specifics of the genetic study. The modern elephant population in question is found in the south of the Gash-Barka region of Eritrea, just north of the Ethiopian border, and numbers upwards of 120 elephants, with the population reportedly on the increase, thanks to improved conservation efforts. For much of the year, the animals live in a dry part of the region, where the habitat consists mainly of doum palm, ziziphus bush and acacia woodland, together with open grassland savannah. This elephant population is quite isolated, with the nearest other elephant populations encountered being more than 400 kilometres away. Now, the researchers collected thirty-three dung samples, with care being taken to ensure that they represented different animals. These samples were then subjected to scientific analysis, from which sequences of mitochondrial DNA were obtained from twenty-one samples, and short nuclear fragments from seven. These samples were compared with those of other elephant populations in Africa, including populations of forest elephants.

For our purposes, the most important result is that the genetic material obtained from the modern Eritrean beasts contained no admixture from existing forest elephants. Further analysis determined that the animals showed the greatest genetic affinity with East African bush elephants rather than those from North Central Africa, which possibly suggests that the elephants of Gash-Barka are a migrant population descended from East African groups, and not descendents of those animals known to the Ptolemies. Of particular note is that, while some bush elephants do carry haplotypes possibly indicative of interbreeding with the forest elephant, those of Eritrea, which might have been expected to do so if we privilege previous classical scholarship on the matter, do not. In short, the elephants now in Eritrea show
no relationship whatsoever to forest elephants, i.e., the type of elephant most commonly associated with the armies of the Ptolemies. That said, the genetic researchers – contrary to the bold claims made in accompanying media releases – do observe that their results “cannot completely rule out the possibility that forest elephants may have existed somewhere in Eritrea in the past”. It would be useful to ascertain if the surviving Eritrean elephants are any smaller than their bush elephant cousins elsewhere. Photographic evidence, however, suggests that they are of the expected stature and general appearance of bush elephants – they certainly do not appear to be of the size of forest elephants.

In view of the above, one is prompted to ponder whether the modern scientific evidence can be reconciled, in some way at least, with Polybius’ testimony. Perhaps the greatest promise of the research introduced above, in the absence of further data, is to cast further light on the identity of those few Ptolemaic animals (Polyb. 5.84.2: ὀλίγα μὲν οὖν τινα τῶν παρὰ Πτολεμαίου) that dared to confront the beasts of the Seleucid king at Raphia. Previous scholars such as Gowers and Scullard, whom I have generally followed in a previous study on Raphia, have attempted to show that these brave animals were not forest elephants but were, in fact, Indians previously captured by the Ptolemies. This supposition rests mainly on the possibility of Indian elephants captured from the Seleucids by Ptolemy IV’s father in 245 B.C. surviving until 217 B.C., or else the animals, as I have postulated elsewhere, “were used to form a small stud?” Although I claimed in the same study that “it is not improbable that Ptolemy IV had a very small number of Indian elephants available in 217 B.C.”, this view must now be regarded as hardly watertight. There is a good deal of recent discussion suggesting that breeding elephants in antiquity was unlikely to have been a profitable enterprise given the general reluctance of elephants to breed in captivity, together with the substantial cost of raising a calf to an age fit for military service – something I have admitted recently elsewhere. The long gestation period also means that cows only give birth...
every three or four years. Moreover, it is possible that the Indian elephants captured by Ptolemy III from Seleucus II were almost all, if not entirely, males. It is generally understood that elephants trained for martial purposes were normally males, with females for the most part being regarded as too timid for battle (Pliny, *HN*. 8.27: *multo pavidiores*). Polybius (3.46.7) and Livy (21.28.8) do record that female elephants accompanied Hannibal, and were present when he crossed the Rhône, but Carthage’s beasts were almost entirely locally-procured forest elephants rather than Indians. We cannot be certain about the number of female Indian elephants dispatched to the Middle East in antiquity, though the presumption is that very few would have been transported so far, especially given the more extreme sexual dimorphism found in this species. Whatever the case, one would not expect that the Ptolemies would have been readily able to secure female animals, especially from their local rivals. If Indian elephants on the Ptolemaic side are all but dismissed from the equation, we are left with the intriguing possibility of the ‘brave’ Ptolemaic elephants’ being something other than either Indian or forest elephants. Could it just be possible that the *locus* refers to at least some of Ptolemy’s elephants being bush elephants?

We know from the Adulis inscription of Ptolemy III Euergetes that he and his son, Ptolemy IV Philopator, the victor at Raphia, captured elephants from the land of the Trogodytae and from Ethiopia; that is, a region close to, if not identical to, modern Eritrea. Murray and Warmington have postulated that the important trading town of Berenice, often referred to in modern literature as Berenice Trogodytica, was established in the former region as a base from which to dispatch elephants overland back to Egypt, with elephants from further south having arrived at Berenice in special craft called *elephantegoi*. In fact, Berenice is still located within the modern state of Egypt. The other area, much further south, from which elephants were procured had Arsinoë Epidires, located close to modern Assab, as its major port. Though known to the ancients as ‘Ethiopia’, this area forms part of the modern state of Eritrea. An important question is whether the African animals from these two disparate regions were the same species. Although Strabo (16.4.18), following Artemidorus, asserts that it is not impossible that already pregnant female animals might have been captured on occasion).

20 Zeuner 1963, 283 (he refers, here, to Indian elephants).
21 It also seems that the animals, at least according to Indian custom, also needed to be of a certain (unspecified) age and strength to be chosen as war elephants; see Pliny, *HN* 6.66.
22 Polybius records that two females were present, while Livy gives no precise number. The female elephants were used to lure the other beasts onto rafts so that they could cross the river.
23 The implication is that female forest elephants were tolerably similar in size to male elephants. Although not ideal for warfare, there might have been some value in training them for military purposes, whereas the more substantial size difference between male and female Indian elephants would have meant that few of the latter were deemed worthwhile to capture and train for war – and, by extension, to transport so far. Females, however, might have been used for logistical purposes.
24 See Dittenberger *OGIS* 54, lines 1–13 (Adulis Inscription), especially line 10: ἐλεφάντων Τρωγλοδυτικῶν καὶ Αἰθιοπικῶν. Note that the lambda in Τρωγλοδυτικῶν is likely to be an erroneous alteration of the correct orthography, as per Murray/Warmington 1967, 242. On this inscription, see Chaniotis 2005, 58, 62.
25 Murray/Warmington 1967, 26; on the *elephantegoi*, see Sidebotham 2011, 48–51.
the two areas are next to each other; 26 they are, if one looks at a modern map, separated by Sudan, and indeed by the Nubian Desert. 27 Refer to Fig. 1 below, where the substantial distance between a) Berenice, on the coast of the land of the Trogodytae, and b) Arsinoë Epidires, on the coast of the land of the Ethiopians, can be seen – with the existing elephant population in Eritrea clearly being closer to the latter port, despite being some way inland. So, it is possible that the beasts from the two areas in question were of the same species, whatever that may be, although it is equally possible, especially when the distance between the two ancient elephant populations is considered, that they were separate groups of animals, with the former being more or less similar to those elephants used by Carthage, i.e., something very similar to a forest elephant,

Fig. 1 Modern Distribution of Elephants in Northeast Africa

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26 Diodorus (3.31.4–3.33 passim, after Artemidorus) also implies that they lived reasonably adjacent to each other, as does Pliny at HN 8.26, who says that the Trogodytae shared the same frontier as Ethiopia: Trogodytae contermini Aethiopiae; see also Hdt. 4.183.4; Strab. 16.4.17-18 (after Artemidorus too).

27 Of course, we cannot be entirely sure that the broader region under consideration was identical from a climatic perspective in antiquity.
and the latter being substantially larger. A clearer understanding, however, is simply not recoverable.

As the genetic evidence cited above would appear to suggest, adult animals from what the ancients described as Ethiopia might have been of a size to clash directly with the Indians of the Seleucids – if, of course, there was continuity between the ancient and modern elephant populations. Polybius’ assertion (5.84.2–4) that the beasts in question met each other “forehead to forehead” (συμπίπτοντα κατά πρόσωπον αὐτοῖς) and interlocked their tusks could therefore make sense for not only an Indian vs. Indian encounter, as per Gowers, Scullard and my previous treatment of the matter, but also for an Indian vs. bush elephant duel. Perhaps those animals that shied away from combat were indeed smaller. They could have been: a) younger bush elephant males that had been procured only recently, as originally proposed by Bevan; b) beasts of the same type used by Carthage, which were very similar to modern forest elephants; or c) animals of either type that were simply not as well trained or as manageable as their Indian counterparts. Indeed, the Ptolemaic army had not campaigned for almost a generation by the time of Raphia. Its elephant corps might well have been lacking in confidence, with its mahouts, as much as the elephants themselves, being reluctant to engage with the better-prepared Seleucid elephants corps, regardless of which animals Ptolemy IV had brought to the field. Moreover, one wonders whether capturing and transporting a particularly large adult male bush elephant, which are usually highly irascible and solitary and would have been larger than Seleucus’ Indians, was possible in any case. In modern times, those seeking to capture the smaller forest elephant in the Belgian Congo found younger animals difficult enough to prepare for work, let

\[28 \text{Sidebotham (2011, 43) also wonders whether the designations were purely geographical, or if they hinted at anatomical differences. Cf. my previous thoughts at Charles 2008a, 348, n. 50, where I wrote that Claudius Aelianus’ tripartite reference at DNA 2.11 to elephants of India, Ethiopia and Libya, ‘might be construed as ancient knowledge of the bush elephant. But it is more likely that the reference to Ethiopia refers to forest elephants living in the region whence those of the Ptolemaic kings were procured’.}

\[29 \text{It is possibly worth while to note that, according to Strabo (16.4.15–16), the elephants of the Ethiopians lived in the same area that produced rhinoceroses and giraffes – in other words, what one might presume to be classic bush elephant country. There is also the possibility that animals were even captured as far south as Djibouti or even Somalia, at least if the tales regarding Lichas and Charimortos are credited; see OGIS 86, where the general Charimortos is described as commanding an elephant-hunting expedition, and Strab. 16.4.14, where a “hunting-ground for elephants” (θήρα τῶν ἐλεφάντων) is described above the harbour of Arsinoë and Deiré (on the coast in modern Eritrea), and another beyond that, where Lichas first hunted the animals, and where the elephants dig wells with their tusks in times of drought; see also Murray/Warmington 1967, 26–27. For more information about elephants of the region, see also Strab. 16.4.10 and 16.4.15. Note, too, Diod. 3.36.3, where we are told that Ptolemy II Philadelphus offered substantial rewards to those who could capture “the most valiant of these beasts” (witness τῶν ἀλκιμωτάτων ζώων).}

\[30 \text{Bevan 1927, 177. Yet Bevan adds that, by 217 B.C., “there must have been numbers of African elephants in the royal stables which … had grown up to their full size”.}

\[31 \text{I thank one of Historia’s anonymous reviewers for this observation. This reviewer noted that, if the Ptolemaic infantry and cavalry forces had been ‘let go’ to some extent before preparations for the campaign against Antiochus III were initiated, it is possible that the elephant corps, being presumably costly to maintain, might have been even more significantly affected by this military malaise.}
alone mature specimens, which proved “virtually impossible to train”. Some might argue that the idea of taming bush elephants of any age is altogether not feasible, yet such a view is unfounded, for a number of bush elephants have recently been trained to carry people in Botswana, and to plough fields. In any case, the Ptolemaic elephant handlers might not have seen a difference, other than simply size at the same age, between Ethiopian bush elephants – if such they were – and a North African population of something resembling the forest elephant.

With the considerations advanced above taken into account, we can break down the elephant encounter at Raphia into four possible scenarios:

1) Indians vs. forest elephants (all from the land of the Trogodytae and Ethiopia), with some brave enough to match the Indians, being either larger, older animals, or at least better trained specimens than more recent acquisitions.

2) Indians vs. forest elephants (all from the land of the Trogodytae and Ethiopia) and some Indians, with only the latter daring to engage their enemy counterparts.

3) Indians vs. forest elephants (from the land of the Trogodytae) and some bush elephants (from Ethiopia), with the former declining to engage the enemy.

4) Indians vs. bush elephants (from the land of the Trogodytae and Ethiopia), with most being either too young or too poorly trained to match the Indians.

Although it is clear that a definitive understanding of what took place at Raphia is impossible to achieve, there are reasonable grounds to dismiss Scenario 2 given the relative implausibility of Indian elephants’ still being available to Ptolemy by 217 B.C., as was discussed above. This would also seem to preclude a possible fifth scenario, i.e., that Ptolemy’s elephants were a mixture of Indian and bush elephants, or indeed both African types. Given that it is just possible that the Ptolemies might have had access to the larger bush elephant, if indeed that beast was present in ancient times in the area explored by the Ptolemies, Scenarios 3 and 4 remain. But there is still no firm evidence to do away completely with Scenario 1, even though the height and weight disparity between Indian elephants and the forest elephant might give us some pause – unless, of course, some of the Seleucid Indians were not fully grown, and were therefore a better match for adult forest elephants. To reflect further on Scenarios 3 and 4, one wonders why the Ptolemies, who were obviously interested in combating...
the Indian elephants of their principal rival, the Seleucids, would not have attempted to train bush elephants if they were available. The Ptolemies surely would have realized that the smaller forest elephant would have been an ineffective substitute for the much more physically imposing Indians. The Romans clearly did so when they fleetingly contemplated pitting their forest elephants against the Seleucid enemy’s Indians at Magnesia in 190 B.C. – in the end, the Romans did not even bother to allow their elephants to enter the battle (Livy, 37.39.13; App. Syr. 31).35

Despite the scenarios introduced above, there are still some factors militating against any of Ptolemy’s elephants’ being bush elephants. First of all, we are still left to explain why ancient authors, who quite regularly discuss elephants in the contexts of battles, spectacles and geography, never describe any African elephant – even those of the Ptolemies – as being bigger than the Indian breed. One might explain this away by the aforementioned argument that the authors writing about the beasts all credited the view that India produces the most marvellously sized creatures. This may, in general, be so. But there was also a belief that Ethiopia was capable of producing beasts more or less equal in size to those of India. Take, for example, the matter of serpents. Pliny tells us that Ethiopia could produce snakes of similar size to those monsters found in India, while Diodorus (3.36.1-2) and Strabo (17.3.5) also described the enormous snakes of the African continent.36 Second, there is the possibility – admitted by the authors of the genetic research – that the modern population of elephants in Eritrea arrived at a point long after the disappearance of a smaller breed similar in size and general disposition to the forest elephant. It is therefore possible, if not quite likely, that the elephants now in Eritrea are a comparatively new population that moved into the area some time after the original elephant population exploited by the Ptolemies had been destroyed.37 Indeed, if we were discussing a DNA study of people rath-

35 That said, the Romans only had 16 beasts available, while Antiochus III had 54 (Livy, 37.39.13).
36 See especially Pliny, *HN* 8.35: *generat eos [dracones] Aethiopia Indicis pares* (“Ethiopia produces serpents of an equal size to those of India”). Rackham’s view (1985, 33), which I have previously followed (see Charles 2008a, 348, n. 50; 2014, 27, n. 4), that this locus, or rather the pronoun eos, refers to elephants rather than serpents is incorrect. For a corrected view, see Charles, forthcoming; cf. Ernout 1952, 28. Pausanias (2.28.1) likewise writes of enormous snakes living in *both* Libya and India.
37 It is worth noting Isidore of Seville’s testimony (at *Etym.* 12.2.16) from the seventh century A. D., where he states that, although elephants once came from Africa and India, “now only India begets them” (*nunc sola eos India gignit*). He states much the same thing at *Etym.* 14.5.12, although he is specifically referring to the absence of elephants in Mauretania Tingitana. Of similar interest is Themistius’ late-fourth-century-A. D. assertion that Libyan elephants were extinct by his day (Orat. 10.140a), while Arrian, writing in the early second century A. D., claims that the upper Ethiopians still used elephants in warfare – which at least suggests that he imagined Ethiopia still being home to elephants. Indeed, we know that the Aksumite Empire (located roughly in modern Eritrea, and in parts of Ethiopia and Sudan) was using elephants for military purposes in the sixth century A. D., and was even transporting them across the Red Sea to participate in the Aksumite general Abrehā’s campaign in Yemen, which culminated in the famous and oft-debated “Year of the Elephant”. This campaign, regarded as possibly being “part of an extensive fiction” by Smith (1954, 434), is referred to in the *Quran* at Sura 105, al-Fil (“The Elephant”), discussed in further detail in its *tafsir* (exegesis) by Ibn Kathir, who wrote in the fourteenth century; cf. Procop. 1.2.1-7, where no elephants are mentioned. The Arab source refers, in particular, to one animal, called Maḥmūd, which was of an extraordinarily large size. This beast, also referred to by al-Tabarī (1.9.41 = Bosworth 1999, 228) and Ibn Ishaq (1.35 = Guillaume 1955, 26), was accompanied by either eight or twelve others according to Ibn
er than elephants, migration would be the most obvious solution to our problem. Third, one wonders why, in Polybius’ account of Raphia, the African elephants failed to defeat the supposedly larger Indian beasts of Antiochus III – they even refused to join combat with them! Unless all these African animals were indomitable, with their mahouts not having sufficient experience to deploy their charges, which could have been recently procured, one might imagine that Indian elephants would have been fearful of the larger bush elephant, which can prove a terrifying sight when angered, especially with its enormous ears extended.

In sum, if the modern genetic research is considered, there remains the possibility that Ptolemaic Egypt did in fact use the larger bush elephants for military purposes. That said, the kind of claims made by the authors of the study in question must be tempered by a wide array of caveats – the study certainly does not ‘debunk’, as one press release put it, all previous scholarship on the size of elephants in the ancient Mediterranean world, together with modern interpretations of the battle of Raphia that see the Ptolemaic force as mainly composed of African elephants that were smaller than the Indians of the Seleucids. A contrary view places far too much weight on the supposition that modern Eritrean elephants, which show no signs of forest elephant admixture, were descendants of the Ethiopian animals known to the ancient world, rather than a completely different population of elephants that arrived long after the destruction of animals previously found in the region. It remains to be seen if genetic material still containing DNA can be recovered to demonstrate once and for all the natural history of those African elephants used by Ptolemaic Egypt. Until contrary evidence comes to hand, we must still presume that these animals, in the main, were more likely to have been similar to a forest elephant rather than a much larger bush elephant. Furthermore, it might be presumed that a combination of lack of size and poor training in the face of a better-trained and -equipped Seleucid elephant corps resulted in their general worthlessness at Raphia. One cannot yet simply dismiss Polybius’ account because it does not fit the genetic evidence provided by a very small population of modern Eritrean elephants located possibly a good distance away from Kathir. Determining the species of these elephants is best left for another study. Phillipson (2012, 210) observes that “elephant protection measures” put in place “by the early sixth century” could be indicative of excessive exploitation for ivory. The same author also observes (p. 71) that the “Aksumite heartland lay far beyond the change of the Ptolemaic hunters”, which suggests that we could, here, be dealing with an entirely separate elephant population.

Kathir. Determining the species of these elephants is best left for another study. Phillipson (2012, 210) observes that “elephant protection measures” put in place “by the early sixth century” could be indicative of excessive exploitation for ivory. The same author also observes (p. 71) that the “Aksumite heartland lay far beyond the change of the Ptolemaic hunters”, which suggests that we could, here, be dealing with an entirely separate elephant population.

I thank one of Historia’s anonymous reviewers for this astute observation.

Ducrey (1985, 110) contends that, “Dans son jugement sévère sur les éléphants d’Afrique à la bataille de Raphia, Polybe ne tient pas compte d’un élément qu’il souligne cependant longuement, c’est l’écrasante supériorité numérique des éléphants d’Antiochus”. This may be so, although Ducrey does not seem to be aware of two different species of African elephant. One should also recall that Ptolemy’s beasts were simply outnumbered (73 to 102, as per Polyb. 5.79.2, 5.79.13), and perhaps the Seleucid animals were also better trained.

Glover (1944, 268–269) maintains that the Ptolemaic beasts were bush elephants, but refused combat because they were taller and had a higher centre of gravity than the Indians of the enemy, his evidence being the fact that a rugby scrum is often won by the forwards that can pack down lowest in the scrum, instead of simply the heaviest pack. This seems like special pleading.
the areas where the Ptolemies procured their ‘Ethiopian’ elephants over 2,000 years ago.

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