PELZELN'S GAZELLE AND ITS RELATIVES

by

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The history of scientific understanding of the euphoniously named Pelzeln's gazelle is interesting, and illustrates the ways in which our knowledge has progressed over the course of a century, as well as our interpretations of biological realities.

As European penetration into Africa progressed, the explorers and "big-game hunters" began to send specimens of local fauna back to scientific institutions. Most of these institutions were in Europe and a few in America; but one of the oldest, most prestigious and longest-standing of these scientific repositories was the museum of the Asiatic Society of Bengal in Calcutta. And so it was that in 1863 the curator of the Asiatic Society's collection, Edward Blyth, received two "trophy" heads of an undescribed species of gazelle from Berbera, northern Somalia. Blyth has since achieved a certain amount of fame as the author of a couple of papers, written in the 1830's which Darwin must have read and from which he evidently extracted, without acknowledgement, some ideas which later formed part of the basis of the idea of Natural Selection. A quarter of a century after putting forth his tentative ideas, and having in the meantime presumably forgotten them, Blyth was now an acknowledged expert on the mammals of tropical Asia; so it must have been with some surprise that he received the gazelles from Somalia but he duly incorporated them into the collection none the less.

The hunter who had shot the gazelles was none other than the discoverer of the source of the Nile, the controversial John Hanning Speke. Blyth duly named the new species Gazella spekei.

As further explorer-hunters (Lort-Phillips, Swayne, Menges) wandered through northern Somalia, it emerged that there were in fact three distinct gazelle species living there. One was the large Soemmerring's gazelle, the other two were both small in size: one, distinguished by a peculiar corrugated area of skin on the nose (which could be puffed out into an inflation the size of a

tennis ball), lived in the plateau country of the hinterland; the other which lacked this nasal excrescence, lived on the coastal plain. Which, then, was the Gazella spekei of Blyth?

As most of the zoologists were in Europe and the explorers were based there too, no-one could check up on the specimens in Calcutta to see which of the three species they represented. Evidently it was not the large Soemmerring's gazelle; but opinions differed about the other two. On the whole it seemed more likely that the one which had been collected earlier was the coastal one, particularly as "Berbera" (a coastal town) was given as the locality where they had been collected.

It was not until 1886 that the problem was resolved. Franz Friedrich Kohl, of the Imperial Natural History Museum in Vienna, Austria received specimens of all three gazelles from the explorer Menges and though he too had not seen the Calcutta specimens he was able to match up the features of one of the Somalia species with those ascribed to G. spekei by Blyth. Unexpectedly, Speke's specimens turned out to be of the plateau race: so Berbera must have been simply the port of export, not the locality of collection of the specimens. The coastal gazelle lacked a name, and on the basis of Menges's specimens Kohl described the new species. What did he call it? One might have thought that to name it after Menges would have been appropriate; or after the country, Somalia; or after some distinguishing feature of the species. But no. He named it - and this speaks volumes about social attitudes in imperial Austria - after his superior, the museum's director, Dom. August von Pelzeln: Gazella pelzelni. And so Pelzeln's gazelle was born.

British zoologists now had to eat their words. Sclater had been so sure that Speke's specimens were of the coastal species that he gave a name to the plateau form: Gazella naso. He and his colleagues hastened to admit their error. In 1891, Oldfield Thomas described gazelles collected by T. W. H. Clarke in northern Somalia, and for the first time was able to distinguish clearly between "the Flabby-nosed Gazelle of the Somali Plateau", G. spekei (of which G. naso now became a synonym) and "the smooth-nosed one of the lowlands, near Berbera, G. pelzelni." And they proved to be very different indeed. There was the matter of the nasal specialisation of Speke's gazelle; and then its horn shape, the great length and development of the female's horns, its larger size, the more boldly marked dark flank-stripe and face stripes and the presence of an extensive black patch on the nose. Pelzeln's

gazelle was smaller, paler, less boldly marked, straighter-horned and had a smaller nose-spot or only a trace.

Drake-Brockman in 1910 published some brief information on Pelzeln's gazelle. He described it, distinguishing it from Speke's and wrote that it had a very restricted range, along the northern Somali coast only, being replaced by Speke's about twenty miles inland. They browse on acacias and live in small groups of 4 or 5.

Few commentators of this era ventured to express an opinion as to what other species Pelzeln's gazelle might be most closely related to. It was not until 1961 that this question was considered. In that year, in the course of a monumental study of Thomson's gazelle of East Africa, A. C. Brooks proposed that Pelzeln's and Thomson's are closely related: pelzelni he suggested, "can be described as a small thomsonii without a well marked flank stripe".

This conclusion did not meet with the approval of Gentry, who in his 1964 study of the skulls of gazelles argued that, on the contrary, pelzelni is very like the well-known and widespread Dorcas gazelle, Gazella dorcas, differing from it mainly by its straight, not lyrate horns. It is, he proposed, "probably the same species as G. dorcas".

In 1969 I undertook a preliminary revision of the small gazelles and like Gentry I could find no real similarity between Pelzeln's and Thomson's gazelles, but a striking one between Pelzeln's and the Dorcas. G. dorcas lives mainly in the Saharan region, extending east in Africa to the Red Sea Hills and Eritrea; in the British Museum collections I came across some small gazelles from the Danakil (Afar) country of northeastern Ethiopia, between the ranges of the Dorcas in Eritrea and Pelzeln's in Somalia. The Afar specimens looked to me perfectly intermediate between the two, and so I placed Pelzeln's a subspecies of the earlier-named Dorcas: Gazella dorcas pelzelni.

Interesting corroborative evidence for this conclusion was provided by Rostron (1972), who performed a multivariate analysis of gazelle skulls, using measurements provided by Gentry, and found pelzelni skulls to be within the general variation of G. dorcas though on the edge of the range. He agreed that the two were probably conspecific.

In 1981 I returned to the question, having in the meantime studied further specimens. Among the new specimens I had seen were several in the Genoa Museum, which had been previously noted by de Beaux in 1931. These were from Beilul and Gaare, in the Danakil country; like those from the same area in the British Museum, they were perfectly intermediate between pelzelni and more typical dorcas gazelles. I therefore reiterated my previous conclusion, that pelzelni is a subspecies of G. dorcas.

The African subspecies of Gazella dorcas can, in fact, be divided into two groups. Those from the Sahara tend to be small and pale in colour; those from the Red Sea coast are larger, deeper in colour, often with a fairly dark flank-band and with a fairly clearly marked nose-spot, which the Saharan forms lack. Pelzeln's gazelle has all the characters of the Red Sea group of races, and is quite similar to the Isabella gazelle, Gazella dorcas isabella, which is the subspecies found from Eritrea along the Sudan coast up into Sinai and southern Israel. It differs from isabella in its larger size (on average only), longer straighter horns which are more heavily ringed in the male, and brighter sandy-ochre colouration. The nose-spot is generally less strongly marked, and in the skull the nasal bones are more expanded posteriorly.

What of the Danakil gazelles; how do they assort when compared with G. d. isabella on the one hand and what I shall henceforth call G. d. pelzelni on the other? I will go through the characters one by one.

In colour the Danakil gazelles more resemble pelzelni but they all have well-marked nose-spots, more like isabella. Male pelzelni skulls average 184.1mm in total length; male isabella, 179.1mm; the mean length of the Danakil skulls is 182.0mm. Female skulls of pelzelni average 97.2% of the male skulls in length; those of isabella are relatively smaller, 94.0% of the males, and so are again intermediate.

If the anterior breadth of the nasal bones (in the snout region) is expressed as a percentage of their posterior breadth (where they form a suture with the frontal bones), the ratio in pelzelni is 92.1, i.e. the nasals become narrower forwards; in isabella it is 97.6; and in the Danakil skulls, 94.6 Again, the Danakil skulls are intermediate, perhaps slightly closer to pelzelni. Interestingly, skulls of G. d. isabella from Eritrea have a ratio of 96.2, i.e. intermediate between those from the Sudan and the Danakil skulls. In the Saharan races of G. dorcas the nasals are actually broader anteriorly than

posteriorly; so there is in this character a complete graduation from the Saharan forms via G. d. isabella (Sudan) through G. d. isabella (Eritrea) to G. d. pelzelni.

Hornlength of male G. d. pelzelni averages 265.8mm (in 12 specimens); that of G. d. isabella, 223.9 (in 15 specimens). In the Danakil specimens, the average of 7 is 215.0mm. Here, then, the Danakil form resembles isabella. The horns of the females, some 60-70% the length of the males, follow this same trend. The males in all gazelles have well-developed rings which are more developed on the front surfaces; in G. dorcas the females, too, have (slightly developed) rings, though in most other species there are none. The modal number of rings is 20 in Pelzeln's gazelle, 16 in G. d. isabella from Sudan and 17 in the Danakil form and in isabella from Eritrea.

The most immediately noticeable difference between Pelzeln's gazelle and all other forms of Gazella dorcas is that its horns are nearly straight, with the tips only slightly inturned; in other Dorcas gazelles the horns flare outward and then converge in again towards the tips. The Danakil gazelles are again intermediate. The greatest span of the horns, which is more or less across the middle of their length, measures only 115.6mm on average in the relatively straight-horned pelzelni, and the tip-to-tip distance is 92% of the greatest span; in isabella the span averages 145.7mm and the tip-to-tip distance is only 56% of the span; while in the Danakil gazelles the span averages 131.4mm and the distance between the tips is 70% of it. So even in its most distinctive feature, Pelzeln's gazelle is linked to the dorcas by an intermediate population.

In all these characters, therefore, these gazelles form a cline from Sudan via Eritrea and the Danakil country to Somalia. There is no sharp break; clearly Pelzeln's gazelle is not a distinct species, but must be a subspecies of G. dorcas (although a very distinct one). It is even a little difficult to decide where to place the Danakil gazelles: are they pelzelni or isabella? As there is no clear division on either side, they have to be allocated by fiat alone. The human mind likes to pigeonhole and categorise, so rather than leave them unclassified I suggest the Danakil gazelles be referred to pelzelni, though it is basically quite arbitrary.

I have tried to show how knowledge of this gazelle has progressed, until a conclusion about its relationships, one that at first sight seemed to go right

against the grain, was virtually forced on us by the weight of evidence. This is what taxonomy is all about: delimiting the boundaries of major groupings and tracing continuities.

If one problem seems therefore to be cleared up, another awaits. In his 1931 paper, the one in which he reported the Danakil gazelles, Oscar de Beaux also described a large, very reddish specimen collected at Barka in Eritrea, as a new subspecies, beccarii. He suggested that certain specimens in the British Museum from the same region, recorded but not described in the literature, might also belong to it.

I saw the type of beccarii in the Genoa Museum; and there is a juvenile skin from the same region, which is just like it. But I am also familiar with the British Museum specimens from near Barka, and they are quite different. Apart from the reddish colour of both Genoa skins, the type skull (the juvenile specimen is without a skull) is simply enormous: 198mm long, way outside the range of any other Dorcas gazelle from anywhere. I can only suggest that it is a special subspecies, Gazella dorcas beccarii, restricted to the highlands, the headwaters of the Baraka (Barka) River. This hypothesis obviously needs to be tested. Some problems get solved, others take their place.

REFERENCES

DE BEAUX, O. (1931). Spedizione del Barone Raimondo Franchetti in Dancalia. Mammiferi. An. Mus. Civ. Stor. Nat. Genova, 55: 183-217.

BLYTH, E. (1863). Catalogue of Mammals in the Museum of the Asiatic Society of Bengal. Calcutta.

BROOKS, A. C. (1961). A study of the Thomson's gazelle (Gazella thomsonii Gunther) in Tanganyika. London.

DRAKE-BROCKMAN, R. E. (1910). Mammals of Somaliland. London

GENTRY, A. W. (1964). Skull characters of African Gazelles. Ann. Mag. Nat. Hist. (13) 7: 353-382.

GROVES, C. P. (1981). Notes on the Gazelles. 3. The Dorcas Gazelles of North Africa. An. Mus. Civ. Stor. Nat. Genova, 83: 455-471.

KOHL, F. F. (1886). Ueber neue und seltene Antilopen. Ann. Hofmus. Wien. 1: 75-86.

ROSTRON, J. (1972). A multivariate statistical study of skull measurements of five taxa of gazelles. Biol. J. Linn. Soc. 4: 1-14.

THOMAS, O. (1891). On some antelopes collected in Somaliland by Mr. T. W. H. Clark. Proc. Zool. Soc. Lond. 206-212.