Egyptian Vultures and the principle of subspecies in vultures

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Three subspecies of the Egyptian Vulture *Neophron percnopterus* (*perenopterus* in Linnaeus 1758, and corrected in Linnaeus 1766) are currently recognised, viz. nominate *percnopterus* (Linnaeus 1758), *ginginianus* (Latham 1790) in the Indian subcontinent, and *majorensis* (Donazar *et al.* 2002) in the Canary Islands, off the north-west coast of Africa. Subspecies, indicated by three Latin names, the genus, the species and a trinominal (more frequently though wrongly called a trinomial), have had a controversial history (e.g. Violani & Barbagli 1997, Zink 2004), but seem to be generally accepted these days; although not including the term in their glossary (p. 23), Hockey *et al.* (2005) nevertheless freely used the concept (p. 14).

What is a subspecies (= race)? It is a recognisable population of a species, by morphology and/or size, and which is geographically separated from other populations of the species. (See also Campbell & Lack (1985) who quoted Ernst Mayr). In general, bird species themselves have also been distinguished on "appearance" and "morphometrics" (Watson 2005). The first two subspecies of the Egyptian Vulture differ by only two characteristics: one is size (by "5%", Ferguson-Lees & Christie 2001: 116) and the other is bill (strictly rhamphotheca, Proctor & Lynch 1993) colour. They meet, and overlap to some extent, in north-west India (Rajasthan 73^{o}E) at least, and Naoroji (2006: 237) has photographic evidence of that. Indeed, not only does the *ginginianus* individual have a yellow bill, it also appears smaller/shorter in size to its *percnopterus* neighbours (*op. cit.* plate 24). While both subspecies are considered to be "locally migratory" (Naoroji 2006: 230) yet it is curious that *ginginianus* is such an

"exceedingly rare vagrant" to Sri Lanka, which is separated from the mainland by a sea crossing of barely 20 km (at Adam's Bridge). By contrast, the western subspecies *percnopterus* can be highly migratory, and makes sea crossings at Gibraltar and Bab-al-Mandab, and has even been recorded on the Azores archipelago, far out into the Atlantic Ocean (Bannerman & Bannerman 1966). On this basis I would expect *percnopterus* to venture far to the east rather than *ginginianus* moving to the west.

Recently there have been two sightings of yellow-billed putative *ginginianus* in the west:

(i) an adult was photographed on Socotra (54^0E) in February 2009, and was eventually thought to be of "abnormal pigmentation" (Porter & Suleiman 2012).

(ii) an adult was photographed in northern Ethiopia (41^0E) in December 2010, and was noted as "considerably smaller" than the *percnopterus* vultures with it (Angelov *et al*. 2013).

From the photographs, neither of these birds can be distinguished from Indian *ginginianus* and therefore they should be considered as such! Of course both sightings militate against what we think birds should do, but birds can presumably do whatever they want. Note that there is a continuous line of Egyptian Vultures from Pakistan to Oman and through the Arabian peninsula (Jennings 2010) to Africa. If Rüppell's Griffon *Gyps rueppellii* can travel over vulture-less territory from Senegal to Spain, then it must surely be possible for *ginginianus* individuals to get lost and move westwards. Thank goodness there were observers there to photograph these errant birds.

The *ginginianus* individual in Ethiopia was "considerably smaller" than the *percnopterus* with it; however a difference between the subspecies of 5% is slight and could it be determined in the field? As could be anticipated, C.S. Roselaar (in Cramp & Simmons 1980) has provided some real data on *percnopterus* skins from museums, to compare against the average of *ginginianus* from literature. Thus –

percnopterus	n	range	av. (± s.d.)
adult ♂ wing	13	486-516 mm	502 (± 11.3)
adult ♀ wing	9	480-514 mm	506 (± 10.9)
ginginianus			
♂ wing	10	442-490 mm	466 (-)
♀ wing	14	455-505 mm	478 (-)

The latter subspecies is 5% -7% shorter in length, females being the less so than males. Of course, observers are not comparing the wing lengths (wings are folded); but the cubic dimension of an average wing length turns the *ginginianus* female wing at 94.5% to a body (?) difference of 84.4%; for the male it is 79.9%. Can these supposed 'body' differences be seen in the field, and would they be rated as considerably smaller? Be that as it may, the yellow bill colour indicates *ginginianus* individuals where they should not be!

In general, subspecies should be geographically separated from one another, so that differences between them can develop and be fixed. In general, too, these differences should be in colours and patterns, so that any individual seen can be immediately placed into either/any of the populations (= subspecies) under consideration. The Bearded Vulture *Gypaetus barbatus* provides a good example, where an individual from Europe (subspecies *barbatus*) can easily be distinguished from one from sub-Saharan Africa (subspecies *meridionalis*) (presence/absence of a black ear tuft, etc.). Partly this is my favourite example because so many photographs from Africa are used to illustrate European birds, and then one recognises the Giant's Castle feeding station in Natal!

Why not in size? As it happens, the African *meridionalis* are also smaller than European and Asian *barbatus*. But size, in both linear measurements and body mass, is more likely to respond to an environmental gradient, for example temperature, altitude and latitude, than to geographical separation as such; and there is now rather a cline in size, or gradation. In this regard of determining subspecies to "exclude clinal variants", I agree with Hockey *et al.* (2005:14). White (1949) early on provided examples of size clines without subspecies differences.

The 3rd subspecies of the Egyptian Vulture, *majorensis* (Donazar *et al.* 2002), has been distinguished by its larger size; there is no differentiation by "plumage patterns of color" from the nearby *percnopterus* subspecies. I would therefore see the population on the Canary Islands as more likely a clinal variant; indeed those authors admit that "gigantism is well known to occur on islands"! However, those authors did produce some evidence for genetic differentiations across the range of the Egyptian Vulture; again one might expect an isolated (?) island population to show genetic variation from the mainland.

It is of course possible that the *ginginianus* individuals under investigation could be escapees from aviaries (C. Murn *in litt*.). This was not considered for the Socotra bird ("abnormal pigmentation", Porter & Suleiman 2012, this bird also has a white/yellow talon in possible support of this opinion, plate 4), nor for the Ethiopian sighting. Could there be bird collections in aviaries on the Arabian peninsula that include a *ginginianus* or two? The individual in Ethiopia, and beautifully portrayed in colour on the cover of *Vulture News* no. 64 (July 2013, but mistakenly labelled no. 63), does not look like an escapee from captivity to me (at least, not a recent escapee). It has no scars on the face, its talons are about the right length, and in particular its bill length seems normal for a wild bird: compare with the huge bill length of a captive bird on the cover of *Vulture News* no. 30 (March 1994). This latter example is typical of captive birds.

In summary then, I regard both of these yellow-billed individuals as specimens of *ginginianus*, albeit far to the west of where they should be. I cannot begin to imagine why they moved westwards, but in doing so they would have been in the company of (black-billed) conspecifics all the way. I expect they would be willing and able to 'inter'-breed with the nominate types, which indicates that more careful observations in the true zone of overlap (e.g. Rajasthan) would be interesting (Naoroji 2006: 230).

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