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**SOME REMARKS CONCERNING SUBSPECIES OF
DUCULA AENEA FROM CELEBES AND
SURROUNDING ISLANDS**

by

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Though Schlegel (1866, p. 200) as well as Hartert (1898, p. 135) pointed out that *Carpophaga paulina*, described by Bonaparte (1850, p. 35) and now known as *Ducula aenea paulina* (Bp.), originating from the Sula Archipelago (East of the East Coast of Celebes) seemed not quite similar to birds from Celebes, lack of sufficient material refrained these authors from separating Sula birds. But this was done by Siebers (1929, p. 152/3) who separated them under the name *Ducula aenea sulana*, on account of their smaller wing measurements and the darker (more chestnut coloured) nuchal patch. The Sula birds should be also smaller than *nuchalis* from the Philippines and (doubtful) *pulchella* from Togian ²⁾ which, according to Siebers, should belong to the same "Formenkreis" as *paulina* and *sulana*.

Siebers compared 8 birds from Sula (1 ♂, 5 ♀ and 2 sex. inc.) in which the length of the wing varied from 208 to 216 mm with 5 specimens (3 ♂ and 2 ♀) originating from Celebes (Paloppo and Bone) having wings varying from 218 + x to 234 mm and with 7 skins (4 ♂ and 3 ♀) from Muna and Buton with wing measurements diverging from 232 to 248 mm.

Besides the 20 birds studied by Siebers I could examine 18 more skins of these pigeons, viz., 3 from the Sula Islands, 2 from Pulau Peleng (island off Northeast Coast Celebes), 4 from Bumbulan (North Celebes),

1) I have to thank Loeloe de Boer for his assistance in preparing this paper.

2) *Ducula aenea pulchella* Walden in my opinion is synonymous with *paulina*, as is borne out by the wing length: 216 mm.

1 from North Celebes (exact locality unknown), 1 from Kulawi (Central Celebes), 2 from Bone (South Celebes; Siebers' statement that Bone is situated in North Celebes must be a slip of the pen), 2 from South Celebes (exact locality unknown), 1 from Mara (Mare?, South Celebes) and 2 from Muna (island off the Southeast Coast Celebes). When comparing these 38 skins (31 specimens from the Buitenzorg Museum and 7 from the collections of the Leiden Museum of Natural History), it is evident that on account of the difference in wing length between the birds from Muna and Buton and those from the other localities, the pigeons originating from these two islands seem to form a separate group.

To demonstrate the differences I compiled the following list of wing lengths, measuring the wings in "natural position", not "flattened", which may explain the apparent discrepancies when comparing my measurements with those of Siebers (l.c.), who most probably measured the wings pressed flat against the rule ³⁾.

Localities:	Subsp.:	Measurements:	Average:
Sula Besi, Sula Mangoli (Sula Islands, East of Celebes)	<i>sulana</i>	♂ 201 ♀ 203, 206, 207, 210, 211 ? 207, 210	} 207.18
Sanana (Sula Islands)	<i>sulana</i> (A)	♀ 212	
Taliabu (Sula Islands)	<i>sulana</i>	♂ 210 ♀ 202	
Pulau Peleng (Island off East coast Celebes)	<i>paulina</i>	♂ 210, 215	} 217.67
Bumbulan (North Celebes)	<i>paulina</i>	♂ 217, 221 ♀ 213, 221	
North Celebes (exact locality unknown)	<i>paulina</i> (B)	? 220	
Kulawi (Central Celebes)	<i>paulina</i> (C)	♀ 213	

3) The birds studied in the Leiden Museum in the list are marked with A-G.

Localities :	Subsp. :	Measurements :	Average :
Paloppo (Central Celebes)	<i>paulina</i>	♂ 211, 227, 229 ♀ 218	217.67
Bone (South Celebes)	<i>paulina</i>	♂ 211 ♀ 211, 221	
South Celebes (exact locality unknown)	<i>paulina</i> (D, E)	♂ 225 ♀ 225	
Mara (Mare?) (South Celebes)	<i>paulina</i> (F)	♂ 220	
Muna (Island off Southeast Coast Celebes)	<i>pallidinucha</i>	♂ 231, 231, 235 (G), 239 ♀ 227	233.44
Buton (Island off Southeast Coast Celebes)	<i>pallidinucha</i>	♂ 227, 238 ♀ 231, 242	

The difference in wing length induced me to propose *Ducula aenea* from Muna and Buton as a new subspecies, but after the war it proved that Mayr (1944, p. 148) arrived at about the same conclusion when studying two skins of this pigeon from Tobea Island, Buton Strait (next to Muna and Buton), which resulted in separating birds from this island as *Ducula aenea pallidinucha*.

According to Mayr (l.c.) the Muna birds of the Elbert expedition seen by Stresemann (1941, p. 57) should also belong to *pallidinucha*.

I have to thank Dr. Junge for the information concerning Mayr's paper when I planned to present my article for publication. Mayr's discovery induced me to cancel the proposed name for Muna and Buton birds. Mayr (l.c.) gives the following diagnosis: "Similar to *paulina*, but nape paler, ochre or almost straw colored, not fox red or maroon; entire under parts averaging paler; size averaging larger". As wing length he mentions: (♂) 225, (♀) 235 mm and for birds from Northern Celebes Mayr gives: 216-229 (225.6) mm.

"The type of *paulina* Bonaparte", Mayr further remarks, "is of unknown origin, but Temminck's plate depicts a bird with maroon-colored nape which is described in the text as "roussâtre foncé". Since this is the typical character of north Celebes birds, it seems justifiable to restrict the type locality of *paulina* to Menado, north Celebes."

When — in Buitenzorg — I compared the above mentioned 13 skins of

D. a. paulina originating from Pulau Peleng (East of Central Celebes) and from Bumbulan, Bone and Paloppo (North and South Celebes) with the 8 birds from Muna and Buton, I considered birds from Bone and Paloppo as typical *paulina* in the sense of Siebers (l.c.) when separating *sulana* and thought it possible that much darker birds from Bumbulan and Pulau Peleng might belong to a new subspecies. But on account of the fact that I could not obtain absolute certainty about the origin of typical *paulina* and reckoning with the possibility that the difference in colour of the Bumbulan and Peleng birds, collected in 1938 and 1939, with the skins originating from Paloppo and Bone, obtained as far back as 1910 and 1913 might be caused by fading of the old skins I thought it better to leave the matter and to consider them as *paulina*.

The 6 birds from Bumbulan and Peleng differ from those obtained at Paloppo and Bone in the following points: Breast, shoulders and crown clearer greyish blue, less vinaceous coloured, clearer white on feathers on throat and at basis of upper mandible; under parts below the breast clearer vinaceous than is the case in specimens from more Southern regions. Reddish brown nuchal patch darker, more maroon coloured than in most Southern birds.

These differences are so obvious that the Northern (fresh) birds can be distinguished at a glance from those originating from the more Southern territories.

As Siebers could not compare these 6 fresh *paulina* and the 2 fresh *sulana* (from Taliabu) skins with his 8 old birds from Sula, because of the fact that they were collected nearly ten years later than his description of *sulana* was published, I may point to the possibility that fresh *sulana* birds may only differ from typical *paulina* in their being smaller which seems probable when comparing the 2 Taliabu skins with the 6 birds from Bumbulan and Peleng.

From my experience and that of Mayr (l.c.) it seems evident that the nuchal collar of *Ducula aenea* from Central and South Celebes averages paler than in birds, which according to Mayr must be seen as typical *paulina*, but our measurements show that skins from Bone (South Celebes) have wings, which average much smaller than those of many birds originating from more Northern areas (Paloppo, Pulau Peleng and Bumbulan), so that—as far as my experiences go—the larger wing length seems not always to go together with the being paler of the nuchal patch.

Neither Mayr nor I could determine the exact origin of the type of *paulina*, but on account of the fact that Temminck's plate depicts a bird with maroon coloured nape which is described in the text as "roussâtre

foncé", Mayr considers it justifiable to restrict the type locality of *paulina* to Menado, north Celebes. But as such a maroon coloured nuchal collar does also occur in the birds originating from Bumbulan, West of Menado, and Pulau Peleng, South of Menado, it may be doubted whether indeed it is right to regard Menado (extreme North Celebes) as the terra typica of *paulina*.

On account of the above I think that it will be very useful to study anew the birds from Central and South Celebes when more fresh material comes at hand, which may result in separating another subspecies, differing from (1) *sulana* (from Sula and Taliabu) on account of its bigger size; (2) *paulina* (from Menado, Bumbulan, Pulau Peleng) because of the difference in colour of nape, crown and under parts and slightly bigger size and (3) similarly coloured *pallidinucha* (from Buton Strait) owing to its smaller size.

The difference in wing length (211-229 mm) between birds from Celebes (Paloppo, Bone, etc.) and those originating from Buton Strait (wings: 227-242 mm) seems too important to include Paloppo and Bone within the range of *pallidinucha* without contesting the validity of Siebers' *sulana* having wings measuring 201-212 mm against typical *paulina* from Bumbulan (and P. Peleng?) with a wing length varying from 210 to 221 mm (according to Mayr (measured "flattened"?): 216-229 mm), provided that the great similarity in plumage shown by the 2 fresh skins of *sulana* from Taliabu and the 6 birds of *paulina* from Bumbulan (4) and Pulau Peleng (2) studied by me will prove to be constant. On the other hand the difference in colour of certain parts of the plumage seems to me an obstacle to include birds from Central and South Celebes within the range of *paulina*.

More fresh material seems to be necessary to establish a more satisfying idea regarding the real systematic position of the different subspecies of *Ducula aenea*, inhabiting Celebes and surrounding islands. The large difference between Taliabu birds shot in 1938 and those from close by Sula Mangoli, obtained more than 25 years earlier shows the inconstancy of the colours in old skins of this pigeon.

In certain points the birds present in the collection of the Leiden Museum differ from those studied by me in Buitenzorg, but in this case too the material was obtained 25-56 years ago. Moreover, the exact localities of origin of several skins are unknown and they are partly in a poor condition, which makes it difficult to reach, e.g., on account of the colour differences of the nuchal collar and the under parts, a conclusion differing from the one expressed above.

Nevertheless it may be important enough to add some particulars to the

measurements of the Leiden material, which I gave in the list published above. The Sula bird (marked in the list with A) has the darkest (less yellowish coloured) nuchal patch of all, except a young bird from Central Celebes (not included in the list, because it has a wing of only 160 mm). The occiput of these two skins seems also less vinaceous, more ashy gray than in the other birds. The nuchal collar of the two birds originating from Mare and Muna (F, G) seems to be lighter than the others, but I fail to see any difference in the colour of the nuchal patch between the skin from North Celebes (B) and those from Central (C) and South Celebes (D, E), though one of the South Celebes birds seems to have the darkest nuchal collar!

The under parts of the three birds from Central Celebes, Mare and Muna (C, F, G) are lighter, clearer vinaceous, than the remaining four skins. The under parts of the North Celebes bird (B) seem to me a trifle darker vinaceous than the bird originating from Central Celebes (C). The Sula bird (A) is nearly similar to the one from North Celebes, though the under parts of the first are more ashy gray, which colour is still more conspicuous in the under parts of the two birds from South Celebes (D, E).

The young bird mentioned above, collected in 1918 in Central Celebes, agrees nearly exactly with an adult specimen, obtained in November at the same locality, but the under parts are much lighter and the nuchal patch seems darker than in the adult bird.

Buitenzorg (Java), 1945; Velsen (Holland), 1949.

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