

type locality. *Thraupis sayaca* and *Thraupis cyanoptera* still have the type locality Brasilia, while *Thraupis episcopus* described from Brazil by Linnaeus has had its type locality changed to Cayenne by Berlepsch ('Revision of Tanagers') who considered Brazil an error. Is he justified in considering this an error when he himself gives the species as occurring in Pará, Brazil? Another point, —in recent years certain authorities have designated "Colombia", for example, as a type locality, but such an indefinite designation seems to me worse than useless.

There are decided advantages in designating and in having types to work with. They are definite individual specimens for comparison. One may say this is only an imaginary advantage, but it certainly helps to solve our problems more accurately. On the other hand, in many cases, tophotypes are better than a faded type for which we have only a sentimental interest and which may confuse us considerably, particularly when brown feathers have turned reddish brown through age. The idea came to me while working on this group that it might well be advisable to have two characters of types, the true type and the substitute type. There might be a classification of types<sup>1</sup> as well as of species in ornithology and a specimen subsequently selected as a type might be called a substitute type.

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## A NOTE ON THE JAPANESE QUAIL.

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### I. INTRODUCTION.

It has hitherto been believed by most ornithologists that there occur two forms of the Quail in Japan, viz., *Coturnix coturnix coturnix* (Linn.) and *C. coturnix japonica* Temm. & Schl. The

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<sup>1</sup> This matter has been discussed at length by zoologists in the past. The most comprehensive classification is, perhaps, that of Schuchert and Buckman (Science, June 9, 1905, pp. 899-901, where some twenty kinds of types are proposed.—EDITOR.

opinion of Ogilvie-Grant on the occurrence of two forms in Japan may here be quoted (Cat. B. Brit. Mus., XXII, 1893, p. 231): "In Japan and China the migratory Quail (*C. coturnix*) inhabits the same tract of country during the breeding season as *C. japonica*, and there cannot be the slightest doubt that the two species frequently interbreed, with the result that all sorts of intermediate hybrids are produced. These intermediate plumages are most noticeable among the male hybrids. For instance, some have the dull brick-red throat of *C. japonica* and the black anchor-shaped mark of *C. coturnix*, others have only the upper two-thirds of the throat dull red and the lower third white, while again a third lot have, in addition, a black band down the center of the red part, and all kinds of intermediate stages between these three examples may be found". He also remarks on the rufous-throated birds often found in Europe as follows: "Equally also, though of secondary importance, *C. coturnix* interbreeds freely with the red-throated resident race (*C. capensis*) in South Africa and the islands surrounding the coast, and the results are seen in the many male birds from South Africa and Southern Europe, etc., in which the white parts on the sides of the head and throat are more or less suffused with the bright rufous chestnut of the resident bird."

On the contrary, Dr. Leonhard Stejneger, in his 'Remarks on Japanese Quails' (Proc. U. S. Nat. Mus., XVI, 1893, p. 765) advanced the view: "But this is hardly more than a postulate, and it is, in fact, somewhat difficult to see how such a hybridization can take place between a resident species and a subspecies (and he calls them only 'races'), the result to be found both among the residents and the migrants. The facts are that these so-called intermediates between *C. capensis* and *C. coturnix* are not only found in South Africa and Southern Europe, but that they are quite common in Central Europe, as evidenced by the detailed description of the throat color and markings by Naumann (Naturg. Vog. Deutsch., VI, 1833, pp. 578, 579, and particularly pp. 580-581). From his remarks it will be seen that the male Quails in Germany vary as much and almost in the same way as the Japanese and Chinese birds described by Mr. Ogilvie-Grant, and by him asserted to be hybrids." Concerning the Japanese specimens which were sent him by Prof. Ijima, he writes: "Looking over my

material I find nothing in it to contradict the supposition that the color and markings of the throat of the male Japanese bird are subject to as much individual variation as in the German bird, and I can see no reason for regarding these various plumages as 'intermediate stages' or 'hybrids.' "

In fact, Ogilvie-Grant did not describe the changes which take place in the feathers on the chin and throat of his so-called hybrids. In this respect, Dr. Stejneger remarks on a single European specimen as follows: "Our European series available at the present writing is very poor, but I wish to call attention to one specimen. U. S. Nat. Mus., No. 100,345; ♂; Koncza, Transsilvania, Hungary; August 28, 1883; J. von Csato coll. Throat coloration almost identical with Ringer's Nagasaki specimen, except that the lateral feathers are not marked with cinnamon-rufous. The lateral throat feathers are perceptibly lengthened and pointed, fully as much as the Korean example."

I have already pointed out that after a study of a large series of Japanese specimens in comparison with those from England, Italy, Caucasus, Rumania, etc., I have been led to the conclusion that there exists in Japan only one form of Quail, viz., *C. c. japonica*. The European Quail (*C. coturnix coturnix*) is found neither in Japan nor in Corea ('Dôbutsugaku Zasshi,' Vol. XXVI, Sept., 1914, pp. 435-440). The Japanese birds are all shorter in wing which is never much over 100 mm.

Dr. Ernest Hartert (Nov. Zool., XXIV, 1917, pp. 420-425) arrived at the same conclusion and remarked that "since *C. c. coturnix* is never found in East Asia, hybrids between it and *C. c. japonica* do not and cannot occur."

## II. SEASONAL CHANGES AND INDIVIDUAL VARIATIONS OF THE THROAT FEATHERS IN THE JAPANESE QUAIL.

Although the result of my investigation of the Japanese Quails is, in the most part, in favour of Dr. Stejneger's view, yet it is in some respects different. The throat feathers of our specimens are of various colors and shapes, but this must be due to individual variation as Stejneger recognizes, and not "hybrid" or "intermediate stages," so-called by Ogilvie-Grant. If they were true

hybrids, there must occur in Japan not only the typical *C. c. japonica* and the so-called hybrids but also the typical *C. c. coturnix*.

Feathers on the chin and throat of our *C. c. japonica* are of various colors, such as dull-chestnut, pale chestnut, gray chestnut, dark vinaceous-cinnamon, and brick-red, which are, no doubt, the colors of the nuptial plumage. In my cage-birds, I observe this change of coloration of the feathers from the middle of May each year! But all males are not destined to become red-throated in summer; as this change takes place only after two or three years. Possibly old males have pale-chestnut throats even in winter, which, however, grow deeper in tone in summer. Again, some old females become pale-chestnut throated in summer but this is not so frequent as in the case of males. Feathers of the throat with red color are rounded, while those with other colors are lanceolate, the former being the nuptial plumage of the adult in summer, and the latter being the winter plumage. Feathers transitory between summer and winter plumages are observable in what Ogilvie-Grant asserts to be hybrids!

Besides the colors of the throat which are different for individuals the shape of the lanceolate feathers on the sides of throat not described by Ogilvie-Grant is especially to be noted; they are lanceolate on the upper part of the throat and rounded on the lower. This peculiarity appears not only in the individual variations, but also in the seasonal changes. Toward May of each year, the lanceolate feathers of the throat are replaced by rounded nuptial ones. The lanceolate feathers on the sides of throat become shortened by abrasion of their tips and finally fall off. Next I observed the *spring partial molt* of the body, especially of the throat and flanks. By this molt there grow new rufous or chestnut feathers with round margins. Of course, the body and flanks appear rufous from the newly grown feathers. From September to October there occurs an *autumnal complete molt* in our wild Quail. By this molt I observed that the feathers fall off on all parts of the body, including head, throat, remiges and rectrices. The replaced new feathers are, no doubt, the winter or non-breeding plumage. The throat feathers also become lanceolate especially on the lateral portions. But in the cage birds which are fed on ground food, there takes place no autumnal complete molt,

so that the birds have always the rufous nuptial or breeding plumage throughout the year. Cage birds deposit as many eggs as the common hen in every season, but this depends on the quantity of dried fish—*Pseudorasbora parva* (Temm. & Schl.) or *Zacco platypus* (Temm. & Schl.)—contained in the ground food.

The red-throated type (without any trace of black) is rather rare; generally a black anchor band, black spots or irregular black marks, etc., are seen on the throat as in the European form; and this is due to individual variation as Dr. Stejneger remarks.

In the breeding season, the bills of most Quails become fully black; in other seasons, they are brownish horn color, blackish brown, or brown, etc.

### III. A COMPARATIVE STUDY ON THE EASTERN AND EUROPEAN QUAILS.

The following is the result of measurements of the Japanese, Corean and south Manchurian specimens preserved in the Zoological Institute, Science College, Tokyo Imperial University and those in my collection:

Loc.	Sex	Culmen mm.	Wing mm.	Tail mm.	Tarsus mm.	Total length mm.
Hokkaido	4 ♂s	13.5	97.5-100.5	35.5-38.5	26.5-28	—
Hondo	45 ♂s	12.5-14	91 -102	35 -42.5	25.5-30.5	—
do.	41 ♀s	13 -14	91.5-104	37.5-43	25 -30.5	—
Shikoku	6 ♂s	12.5-13	95.5-98.5	37 -40	26 -28	—
do.	2 ♀s	12.5-14	97.5-101	41 -42.5	27	—
Kiusiu	1 ♀	13	100.5	39.5	27.5	—
Corea	1 ♀	12.5	95	40	26	—
S. Man- churia	9 ♂s	11.5-14	93 -100	34.5-40	23.5-27	173-180
S. Man- churia	11 ♀s	12 -14.5	95 -100	31 -37	24.5-27	172-190

The limits of measurements in the above table are:

Sixty-four males, culmen 11.5-14 mm., wing 91-102 mm., tail 34.5-42.5 mm., tarsus 23.5-30.5 mm.

Fifty-six females, culmen 12-14.5 mm., wing 91.5-104 mm., tail 31-43 mm., tarsus 24.5-30.5 mm.

Dr. Hartert gives the measurements of the two forms as follows:—

“The adult female in spring and summer is so much like that of

*C. c. coturnix* that I am unable to give constant distinguishing characters, though *C. c. japonica* is generally smaller: wings, ♂ 98–102, ♀ 100–106, against ♂ 104–115, ♀ 106–117 mm. in *C. c. coturnix*." (Nov. Zool., XXIV, 1917, pp. 421–422).

The measurements with the notes on the color and shape of throat feathers and color of bills of the European *C. c. coturnix* which are preserved in my own collection follow:

Locality	Date	Sex	Culmen	Wing	Tail	Tarsus
1 England	—	♂	13.5 mm.	105.5 mm.	39 mm.	28.5 mm.
2 do.	—	♀	13.5 "	109 "	40.5 "	23.5 "
3 Italy	April	♂	13.5 "	103 "	38 "	29 "
4 do.	do.	♂	14.5 "	107 "	39.5 "	27.5 "
5 Caucasus	March	♂	13.5 "	105.5 "	36.5 "	28 "
6 do.	April	♂	14 "	110 "	38 "	28 "
7 do.	May	♀	14 "	106 "	36.5 "	26 "
8 do.	do.	♀	13.5 "	104.5 "	38 "	27.5 "
9 do.	March	♀	13.5 "	104.5 "	37.5 "	26 "
10 Astrakhan, Russia	May	♂	14 "	106.5 "	41 "	28 "
11 Astrakhan, Russia	May	♀	14 "	111.5 "	38.5 "	29 "
12 Astrakhan, Russia	May	♀	13.5 "	105.5 "	36.5 "	26 "
13 Rumania	April	♀	14 "	109 "	37 "	30 "
14 do.	do.	♀	13.5 "	106 "	38 "	28 "

Color and shape of throat feathers and color of bills as follows:

1 Nearly rounded and pale buffy white with indistinct black anchor mark on middle of throat; bill brownish horn.

2 All rounded and nearly white; bill brownish white.

3 All rounded and nearly white with grayish black mark on middle of throat; bill brownish black.

4 Rounded and nearly white with narrow blackish band on middle; bill black.

5 Rounded with a large black patch on middle, side of the black patch with white and chestnut spots; bill black.

6 Rounded with a dark brownish black patch on middle; bill brownish black. Like *japonica*.

7 Same as the preceding male, but the lateral throat buffy; bill brownish horn color.

8 Rounded with dark chestnut spots; bill brownish black. Like *japonica*.

9 Nearly rounded with a pale chestnut anchor patch; bill black.

10 Rounded and gray chestnut with white shafts, a narrow black band on middle; bill blackish brown. Like *japonica*.

11 Comparatively long but not lanceolate, with buffy color bill; brownish horn color.

12 Same as the preceding female, but color of throat nearly white; bill brownish horn.

13 Nearly rounded with a narrow central streak, other parts and cheeks chestnut-red with white shafts; bill brownish black. Like *japonica*.

14 Rounded with a narrow pale blackish streak, two brownish red rings on lower throat, other parts white; bill brownish-black.

Thus the limits are:

Six males: Culmen 13.5–14.5 mm., wing 103–110 mm., tail 36.5–41 mm., tarsus 27.5–29 mm.

Eight females: Culmen 13.5–14 mm., wing 104.5–111.5 mm., tail 36.5–40.5 mm., tarsus 23.5–30 mm.

The length of wing of the European specimens before me is somewhat shorter on an average than the measurements given by Dr. Hartert (see antea). This is probably due to the fact that the number of specimens examined by me is far less than that of Dr. Hartert.

In my investigation, a series from Europe was available, none of which, however, had throat feathers so lengthened and pointed as the Japanese and other eastern birds.

As regards the elongated throat feathers of the eastern birds, Dr. Stejneger says: "Concerning the exact significance of the elongated throat feathers in the eastern birds, I have no well-founded theory to offer, but it seems to me as if there might be only a strong tendency toward the development of a 'beard' in the eastern form, with an individual variation in this respect similar to the throat coloration." In the case of the eastern form, my view wholly agrees with that of Dr. Stejneger. I think, moreover, that the European form with elongated throat feathers would probably be a very rare case.

#### IV. CONCLUSION.

By this study it is now settled that the Japanese and other eastern Quails are of only one form, so that the European *C. c. coturnix* should be omitted from the list of Japanese birds.

To show the key to the two forms:

- (A). Wing: 91-104 mm. (106, after Hartert).
- (a). Feathers on chin and throat dull brick-red or dark vinaceous-cinnamon, sometimes with a black anchor band situated as in *coturnix* ♂.....*C. c. japonica*, ♂ æstiv.
  - (b). Feathers on chin and upper side of throat lanceolate, generally whitish. Feathers on the lower parts rounded, some specimens with a blackish brown band passing down the middle of throat.  
*C. c. japonica*, ♂ hiem.
  - (c). Feathers on chin and sides of throat elongated and lanceolate, usually margined on outer or both webs with rufous or blackish. No black median band.....*C. c. japonica*, ♀ ad.
- (B). Wing: 103-117 mm. (after Hartert).
- (d). Feathers on chin and throat whitish or buffish, short and rounded, with a black anchor shaped band commencing on chin and passing down the middle of throat.  
*C. c. coturnix*, ♂ ad.
  - (e). Feathers on chin and sides of throat white, short and rounded. Generally no black band down the middle of throat, sometimes with an indistinct blackish or pale chestnut median band.....*C. c. coturnix*, ♀ ad.

*C. c. japonica* is distributed as follows:

“East Siberia from Dauria (Transbaikalia) to the Amur and Ussuriland, south to China and Japan. In winter to Hainan and Formosa, in small numbers to Burma and Bhutan” (Hartert, *l. c.*, p. 425).

Dr. Hartert mentioned that it is “not known from the Loo-Choo (Riu-Kiu) Islands.” Mr. Uchida, however, reported the form from Amami-ôshima, one of the northern Loo-Choo group. In Japan it occurs from Sakhalin Is. to Amami-ôshima and Tsushima as well as Corean in the Peninsula.

In conclusion, I express my best thanks to the late Dr. I. Ijima, the late Mr. M. Namiye, and Mr. S. Uchida for their valuable advice in the course of the work.

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