

HYBRIDIZATION BETWEEN THE BOB-WHITE AND  
SCALED QUAIL

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THE Scaled Quail (*Callipepla squamata*) is known to hybridize with at least two other quails, the Gambel's, *Lophortyx gambelii* (Bailey, 1928) and the Bob-white, *Colinus virginianus* (Sennett, 1892). This paper is concerned with the latter cross.

In the fall of 1940, Elmer Hanson of Racine, Wisconsin, who bought and sold live wild animals, showed me a crate containing six quail. When asked to identify these birds I said they were Scaled Quail, although the coloring was generally darker and by no means typical. Hanson informed me these birds were hybrids between a Bob-white and a Scaled Quail.

The history of Hanson's birds is briefly this. He had held a pair each of Bob-white and Scaled Quail in the same pen awaiting prospective buyers. No such buyers materialized so Hanson was forced to hold the birds into the breeding season; and because space was limited, both pairs were kept in one small pen. Assuming that these distinct species would segregate during mating, no further thought was given to the birds until both females built nests and laid eggs. Hanson then noticed that the male Bob-white courted both hens and drove the male Scaled Quail from them. When the young hatched and were half-grown, the cross between the male Bob-white and female Scaled Quail was detected. The hybrids, six in all, represented a complete hatching of the six eggs laid. All were raised, and when I saw the birds in October of that year they were lively and appeared to be in perfect health.

Dr. Raymond D. Owen, then of the University of Wisconsin's Department of Genetics, performed a laparotomy on each bird and found all six to be females. We had hoped to backcross the F<sub>1</sub> females with male Bob-whites for further study.

A weak bird was turned over to me for a museum skin. A second bird was killed and eaten by a cat. The remaining four birds died during the winter, thus the opportunity to backcross was lost. The skin of one of these birds was given to me by Hanson in 1951.

It is common knowledge among zoo keepers and game breeders that peculiar hybrids may be obtained in captivity. The interesting aspect of the Bob-white-Scaled-Quail cross, however, is that it can occur in the wild since in Texas and perhaps western Oklahoma the native ranges of these two species overlap (figure 1). Until Cockrum's paper (1952) appeared, I assumed that the two skins in my possession

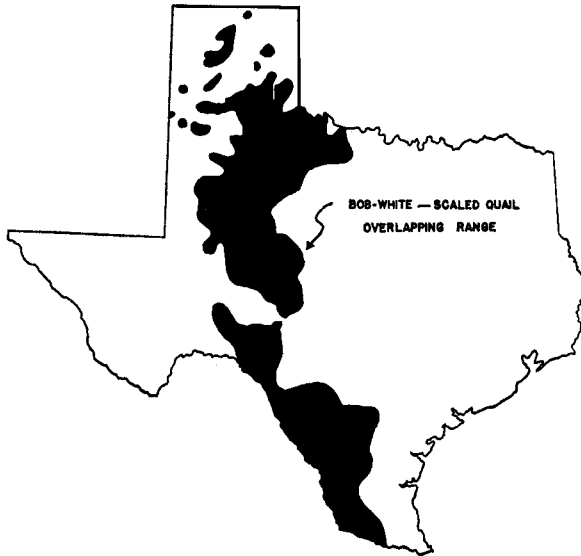
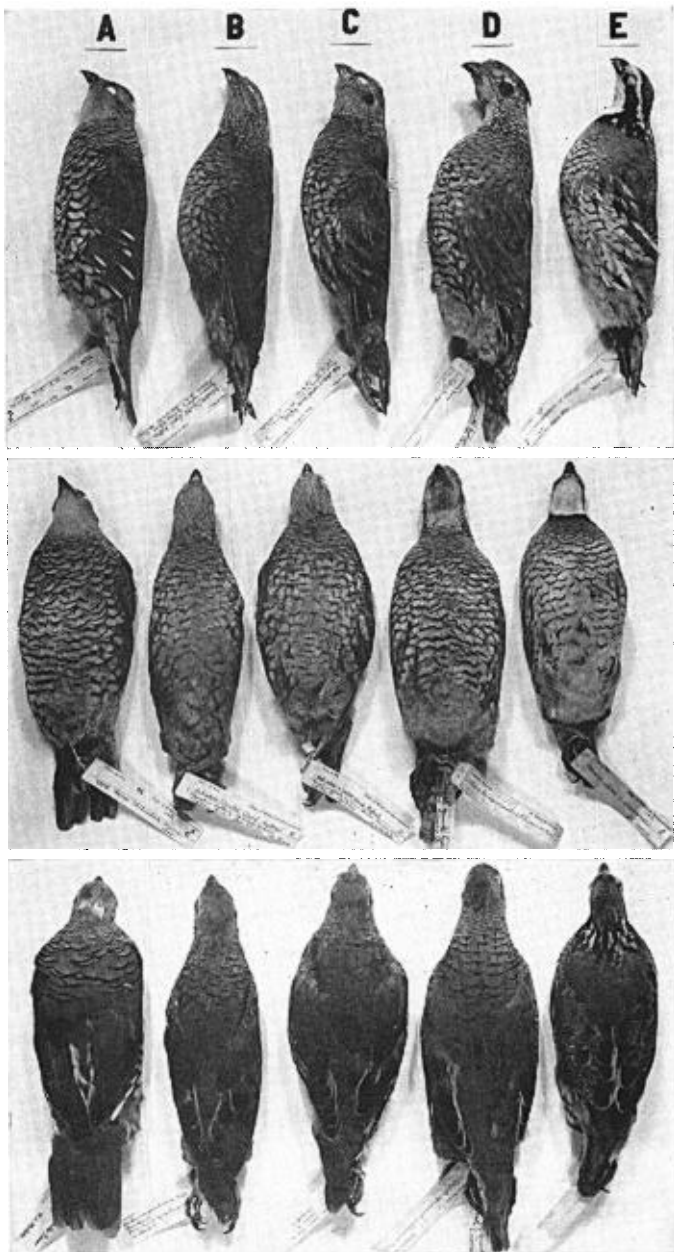


FIGURE 1. The area of range overlap of the Bob-white and the Scaled Quail in Texas. (After Texas Game, Fish and Oyster Commission, 1945.)

were the only two in existence. Cockrum cites a French reference (Suchetet, 1897) as recording a similar hybrid occurring *in the wild*. On checking this reference, I found the hybrid was one mentioned by George B. Sennett in a paper read before the Linnaean Society of New York on April 1, 1891, and reported in the Abstracts of the Society's Proceedings (1892). There was also, however, a mention of this bird in the Abstracts for the year ending March 7, 1890 (p. 10) "Mr. George B. Sennett said he had come into possession recently of a well marked hybrid between the Scaled Partridge (*Callipepla squamata*) and the Bob-white (*Colinus virginianus*)." Since the label on the specimen indicates that it had been collected in January, 1890, it must have been received by Sennett shortly thereafter. I was unable to find any published description of this specimen. Suchetet, however, was apparently not satisfied with the one-sentence record of so important a hybrid. In his volume on birds (1897) he states that Sennett wrote him about the specimen. It seems likely that the letter was in answer to an inquiry by Suchetet. Sennett's letter, according to Suchetet, stated that the hybrid was shot in Concho County, Texas, in 1889, by Mr. Lomies, a landowner at Rauch. Unfortunately, these facts seem to have suffered, although not seriously, through the correspondence and subsequent translation. The original label on Sennett's specimen indicates that the bird was collected in 1890, by Mr. J. A. Loomis,



LATERAL, VENTRAL, AND DORSAL VIEWS OF (A) MALE SCALED QUAIL, (B AND C) FEMALE SCALED QUAIL X BOB-WHITE HYBRIDS, (D) MALE SCALED QUAIL X BOB-WHITE HYBRID, AND (E) MALE BOB-WHITE.

and no such locality as Rauch is listed. In fact, there is no town or township by that name in Concho County, or in Texas. The confusion concerning the locality is probably the fault of the translation to the French from Sennett's longhand letter. It is possible that the letter "n" in the word ranch appeared like a "u" and was therefore translated as the place name Rauch. Loomis was, according to Sennett, a well-educated man and a good hunter, so that his certainty of other hybrids in the covey from which the specimen was taken is given some credence by the latter.

Suchetet further records a description of the hybrid given him by Sennett from memory since the latter "was away" from the American Museum where the specimen was housed. The following is the description from the French, translated for me by Gaston Moisan, Quebec Department of Game and Fish: "On the top of the head can be seen a tuft composed of a few vertical feathers different from the feathers of *C. squamata*; they are wide and flat as the feathers ornamenting the head of *Colinus virginianus*. The breast is like *C. squamata*; the belly as *C. virginianus*. The back and the coverts are a mixture of the two species. The throat is white. The tail pattern, as far as he can remember, is a mixture. Sex is male. The specimen has been well prepared and is in perfect plumage."

I have examined Sennett's hybrid (courtesy of the American Museum of Natural History, New York City) and find his memory in this case was very accurate.

In plate 22 are shown five specimens: a male Scaled Quail (A), two female hybrids from Wisconsin (B and C), Sennett's wild-shot male hybrid (D), and a male Bob-white (E). The hybrid character of the color and pattern is most striking in the male hybrid. This is probably a result of inherited dimorphism from the Bob-white parent.

*Ventral Aspect.*—The hybrid male (D) has a white chin patch, whereas the two female hybrids (B and C) have ochraceous-tawny chins and throats not unlike that of a female Bob-white. The chin and throat of the Scaled Quail is light buff, and the distinction can be seen even in the black and white photograph. The characteristic black border of the chin patch of the male Bob-white is lacking in the male hybrid. There is, however, a patch of hazel-colored feathers on the chin below the lower mandible, which is unlike that of either parent species. The breast feathers on all the hybrids are very much like those of the Scaled Quail except that the black edging of the feathers is very narrow.

The belly feathers of the hybrids, particularly the male, are most like those of the Scaled Quail. Even the faint barring of the semi-

plume feathers of the abdomen resembles that of the Scaled Quail. The side and flank feathers of the ventral tract, which are best shown in lateral view, are similar in color and markings to those of the Bob-white, being tri-colored (black, brown, and white) but essentially Kaiser brown to hazel in appearance. The male hybrid (D) and female (B) show the light tear-shaped shaft marking on the longer flank feathers so characteristic of the Scaled Quail. The undertail coverts of the hybrids are marked like *Callipepla* but are tinged with reddish like those of *Colinus*.

*Dorsal Aspect.*—The neck of the male is very similar to that of the Scaled Quail, but as on the breast, it lacks the black edging of the typically squamate feathers. Both females, on the other hand, have much brown coloring in the neck and upper back, in which they resemble the Bob-white. The lower back and upper tail coverts of all hybrids are strikingly like those parts in *C. squamata*.

The edges of the exposed tertials in both parent species are light in color. Those of the Scaled Quail are white, and of the Bob-white, warm buff. The male hybrid is similar to the Scaled Quail in this respect whereas the females are like the Bob-white. All hybrids have the exposed tertials dark and finely mottled as in the Bob-white. This darkening and fine mottling is much reduced or lacking on the lower back and upper tail coverts of the hybrids. The tail feathers of the hybrids are essentially gray and more like those of the Scaled Quail although they show slightly more fine mottling.

*Head.*—The male cross has white on the forehead, and this runs back above the upper mandible. Although it is grizzled in appearance because of interspersed dark feathers, the Bob-white affinity is none the less obvious. The remainder of the crown is a dark mixture of browns and grays. The top-knot is longer than the Bob-white's crest but not as wide as that of the Scaled Quail and contains no white feathers to show a "cotton top." The side of the head in the hybrid male has the light-dark pattern of the Bob-white, but the sharply contrasting colors are lacking. A stripe over and behind the eye can be seen.

Both female hybrids show only a suggestion of a crest and have no white feathers. The lateral view of the heads of the females shows no distinct pattern, and the color shades from warm buff on the chin to tawny on the side of the head and over the eye. The auriculars are darker. The forehead, crown, and occiput are essentially cinnamon brown. The bill in all hybrids is more like that of the Bob-white showing a greater width and sharper curvature than found in Scaled Quails' bills. Likewise the lower mandible in both female hybrids is yellow at the base like that of the female Bob-white. I do not recall

the color of the iris and legs of the female hybrids and no information on the color of these parts is available for Sennett's bird.

*Measurements.*—All measurements taken fall within the range of both species (by sex) as given in Friedmann (1946). The results (in millimeters) were as follows:

	<i>Culmen</i>	<i>Tarsus</i>	<i>Middle Toe</i> (without claw)
<i>Colinus virginianus</i> ♂ <sup>1</sup>	14.7–18.2 (16.3)	28.0–34.1 (31.5)	24.8–30.3 (29.3)
<i>Colinus virginianus</i> ♀ <sup>1</sup>	14.0–15.5 (14.7)	28.5–34.0 (30.8)	25.5–31.0 (28.1)
<i>Callipepla squamata</i> ♂ <sup>1</sup>	16.1–17.7 (16.7)	31.0–35.0 (33.0)	27.0–28.0 (27.4)
<i>Callipepla squamata</i> ♀ <sup>1</sup>	15.0–17.2 (16.3)	30.5–34.0 (32.4)	26.0–28.0 (26.9)
<i>Callipepla</i> × <i>Colinus</i> ♂	16.0	33.4	29.6
<i>Callipepla</i> × <i>Colinus</i> ♀	15.6	31.8	27.5
<i>Callipepla</i> × <i>Colinus</i> ♀	15.0	32.6	29.9

<sup>1</sup> Friedmann (*op. cit.*)

One of the most interesting aspects of this case of hybridization is that it involved one monomorphic and one dimorphic species. It would be interesting to verify further the color-controlling mechanism through hormone studies and feather transplants. Although fertility of the hybrids seems likely, a backcrossing experiment would ascertain whether or not this were so. A final speculation on the merits of this hybrid for study is the possibility of observing the hybridization of behavior patterns.

#### SUMMARY

Two captive-raised female hybrids between a male Bob-white and female Scaled Quail were compared with a wild-shot male hybrid and the parent species. There was a general overall hybridization of color, but the dimorphic coloration like that of the Bob-white, though subdued, was evident in the hybrids.

This cross is likely to occur where the ranges of the two species overlap in Texas and western Oklahoma.

#### LITERATURE CITED

- BAILEY, V. 1928. A hybrid Scaled × Gambel's Quail from New Mexico. *Auk*, 45 (2): 210.
- COCKRUM, E. L. 1952. A check-list and bibliography of hybrid birds in North America north of Mexico. *Wilson Bull.*, 64 (3): 140–159.
- FRIEDMANN, H. 1946. The birds of North and Middle America. *Bull. 50, Smithsonian Institution (U. S. Natl. Mus.)* 484 pp.
- SENNETT, G. B. 1892. Abstracts Proc. Linnaean Soc. N. Y., March 2, 1892, pp. 8. (Record of oral communication.)
- SUCHETET, A. 1897. Des hybrides a l'etat sauvage. Tome I, (Classe des Oiseaux), J. B. Baillièrre Fils, Paris, clii + 1001 pp.
- TEXAS GAME, FISH AND OYSTER COMMISSION. 1945. Principal game birds and mammals of Texas, pp. 149.

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