

May 2008

19 Tree Quails

Paul A. Johnsgard

University of Nebraska-Lincoln, pajohnsgard@gmail.com

Follow this and additional works at: <http://digitalcommons.unl.edu/bioscigrouse>



Part of the [Ornithology Commons](#)

Johnsgard, Paul A., "19 Tree Quails" (2008). *Grouse and Quails of North America*, by Paul A. Johnsgard. 21.
<http://digitalcommons.unl.edu/bioscigrouse/21>

This Article is brought to you for free and open access by the Papers in the Biological Sciences at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Grouse and Quails of North America, by Paul A. Johnsgard by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Tree Quails:

Long-tailed Tree Quail

Dendrortyx macroura (Jardine & Selby) 1828

OTHER VERNACULAR NAMES

CORDORNIZ Coluda; Gallina del Monte, Gallina de la Montaña, long-tailed partridge, long-tailed wood partridge, Perdiz Coluda, Perdiz del Volcán.

RANGE

Highlands of Mexico from Michoacán and Veracruz south to Oaxaca.

SUBSPECIES (*ex Check-list of the Birds of Mexico*)

D. m. macroura: Eastern long-tailed tree quail. Resident in the mountain forests of the Valley of Mexico and the highlands of Veracruz.

D. m. griseipectus Nelson: Gray-breasted tree quail. Known only from the heavy oak forest of the Pacific slope of the Cordillera, in Mexico, Distrito Federal, and Morelos.

D. m. diversus Friedmann: Jalisco long-tailed tree quail. Resident in the highland forest of northwestern Jalisco.

D. m. striatus Nelson: Guerrero long-tailed tree quail. Resident above

eight thousand feet in the highland forests from southern Jalisco to Michoacán and the cordillera of Guerrero.

D. m. oaxacae Nelson: Oaxacan long-tailed tree quail. Resident in the mountain forests of eastern Oaxaca from the Cerro San Felipe to Mount Zempoaltepec.

D. m. inesperatus Phillips. Resident in mountains near Chilpancingo, Guerrero. Recently described (1966) and not in Mexican *Check-list*.

MEASUREMENTS

Folded wing: Adults, both sexes, 141–69 mm (males average 5 mm longer than females).

Tail: Adults, both sexes, 119–75 mm (males average 11 mm longer than females).

IDENTIFICATION

Adults, 12–15 inches long. The sexes are alike in plumage. This is the largest and heaviest of North American quail, and it and its two close relatives are the only ones to have extremely long tails. This species differs from its two congeners in that it has a black throat and forehead and blackish feathers around the ears. A bushy, brown crest is present, and the upper back and chest are reddish brown edged with gray, while the lower back is mottled with olive brown, black, and tawny. The breast is gray, streaked with reddish brown, grading to olive on the sides and abdomen. The bill, legs, feet, and bare skin around the eyes are all red. (Modified from Leopold, 1959.)

FIELD MARKS

Rarely seen in the field, this species inhabits dense underbrush of mountain slopes in Mexico. It and related species have a long-legged and upright appearance but can compress the body and slip away unobserved (Dickey and van Rossem, 1938). More often heard than seen, its calls include grouse-like alarm notes (Schaldach, 1963). Its elaborate song is heard most often at dawn and is distinctive; it is a series of about five grunting, hooting notes that rise in volume and are followed by a loud, ringing *kor-EEE-oh*, repeated several times (Warner, 1959), or a series of *ko'-or-eee'* phrases spaced about one second apart, often in a chorus involving several birds.

Tree Quails: Bearded Tree Quail

Dendrortyx barbatus (Gould) 1846

OTHER VERNACULAR NAMES

Bearded wood partridge, Chiviscoyo.

RANGE

Resident in the mountain forests of the state of Veracruz, Mexico, northward to eastern San Luis Potosi and eastern Hidalgo.

SUBSPECIES

None described.

MEASUREMENTS

Folded wing: Adults, both sexes, 147–66 mm (males average 5 mm longer than females).

Tail: Adults, both sexes, 110–21 mm (males average 11 mm longer than females).

IDENTIFICATION

Adults, 9–10 inches long, sexes alike in appearance. Similar to the preceding species, but with a gray throat and chest, a buffy brown crown, and a cinnamon brown breast and abdomen.

FIELD MARKS

If seen, the buffy brown crown and gray chin and throat region will readily separate this species from the long-tailed tree quail, in the few areas where both occur (Orizaba and Cofre de Perote in Puebla and Veracruz). Its calls are similar to those of the long-tailed tree quail.

Tree Quails: Buffy-crowned Tree Quail

Dendrortyx leucophrys (Gould) 1844

OTHER VERNACULAR NAMES

Gallina de Monte, highland wood partridge, long-tailed partridge, white-throated wood partridge.

RANGE

Highlands of Chiapas, Guatemala, Honduras, Nicaragua, and Costa Rica. Few specimens are known from Chiapas, but the species evidently occurs both in the Sierra Madre of Chiapas and in the interior montane forests north of the Río Grijalva (see distribution section).

MEXICAN SUBSPECIES

D. l. leucophrys: Guatemalan buffy-crowned tree quail. Resident in the moist mountain forests of Chiapas. Another race (*D. l. nicaraguae*) has been described from the Pacific Cordillera of adjoining Guatemala, but apparently is not valid (Baepler, 1962).

MEASUREMENTS

Folded wing: Adults, both sexes, 130–55 mm (males average 14 mm longer than females).

Tail: Adults, both sexes, 108–43 mm (males average 16 mm longer than females).

IDENTIFICATION

Adults, 12–14 inches long, sexes alike in appearance. Differs from the two other species of tree quails in the pale buffy forehead and the white

eye-stripe, chin, and throat. The lower throat and breast are also more grayish than is true of the bearded tree quail, and the tail is longer than in that species but shorter than in the long-tailed tree quail.

FIELD MARKS

Like the other tree quails, this species is rarely seen, but is usually detected by its repeated ringing calls, which are loud and rollicking, consisting of four syllables (Edwards, 1968). If the bird is seen, the long tail, red legs, and relatively slim body will identify it as a tree quail. When walking on the ground it often holds its tail at a slightly cocked angle, with the feathers somewhat compressed and vaulted, reminiscent of bantam chickens.* This is the only species of tree quail known to occur in Chiapas and unlike the other two species has a black bill rather than a bright reddish bill color, as well as a white forehead.

AGE AND SEX CRITERIA (All Species)

Females apparently are not readily separable from adult males by external characteristics, but they do tend to have shorter tails (see measurements).

Immatures evidently have the outer two primaries frayed (true of at least *D. leucophrys*) and have buffy tips on the upper greater primary coverts (also in *leucophrys*). Petrides (1942) indicates that age of *D. macroura* can also be determined by conventional methods.

Juveniles of at least the long-tailed and buffy-crowned tree quails have white shaft-streaks in the breast, belly, and back feathers, expanding to form large V-shaped markings or broad white bars at the ends of the feathers.

Downy young of the bearded tree quail (illustrated in color plate 110) are representative of the genus. The corresponding plumage of the buffy-crowned tree quail is apparently undescribed and the only description of the long-tailed tree quail available is that of Warner (1959), which was based on somewhat older birds starting to assume the juvenal plumage. Both species are a nearly uniform auburn brown on the back, with no darker or lighter streaking evident and are fairly bright yellow below, particularly on the throat. The crown is dark auburn in both, and the face is yellowish with a large dark brown ear-patch and a smaller loreal stripe. They most resemble spotted wood quail of the same age, the difference being the latter's

*Miguel Alvarez del Toro, 1970: personal communication.

duller and more olive-colored underparts and more reddish face, especially above the eyes. Two recently hatched specimens of the long-tailed tree quail in the United States National Museum are comparable in age and very similar in appearance to the downy bearded tree quail illustrated here.

Two quarter-grown specimens of the buffy-crowned tree quail in the Field Museum of Natural History still have down-covered heads and exhibit a very similar pattern, with a rusty brown crown, a brown ear-patch, yellow to buffy cheeks and superciliary stripes, and a yellow throat.

The downy specimen of the bearded tree quail shown in the color plate is from the James Ford Bell Museum of Natural History, Minneapolis, Minnesota.

DISTRIBUTION

The distribution of the three species of tree quails is largely but not entirely complementary, with a limited degree of overlapping in eastern Puebla and Veracruz, where the long-tailed quail and bearded tree quail occur together on Pico de Orizaba and Cofre de Perote (Leopold, 1959). Of the three, the long-tailed tree quail has the largest range in Mexico and occurs in cloud forests on most of the mountain ranges north of the Isthmus of Tehuantepec northward to northwestern Jalisco and the vicinity of Orizaba, Veracruz. Further northern extension on the western part of the range is presumably blocked by a break in the mountains (to about three thousand feet) at 21 degrees north latitude near Guadalajara, but no equivalent barrier blocks possible northward extension in Veracruz. Perhaps, however, competition with the bearded tree quail in this area has prevented such range expansion.

The bearded tree quail occupies a comparable cloud forest habitat of the Sierra Madre Oriental from San Luis Potosí southward through eastern Hidalgo and eastern Puebla to Veracruz, at the eastern end of the Sierra Volcanica Transversal. Its range may extend somewhat farther south than Orizaba, but in any case probably occurs no farther than central Veracruz, where there are apparently breaks in the cloud forest (Martin, 1955). In southern Oaxaca the long-tailed tree quail likewise reaches the southern limits of its range, probably near La Cima (Binford, 1968).

The buffy-crowned tree quail occurs only south of the Isthmus of Tehuantepec, and Leopold (1959) indicates its range as including only the Sierra Madre de Chiapas of extreme southern Chiapas. However, Miguel Alvarez del Toro informed me* that not only has he observed the birds in cloud

*Miguel Alvarez del Toro, 1970: personal communication.

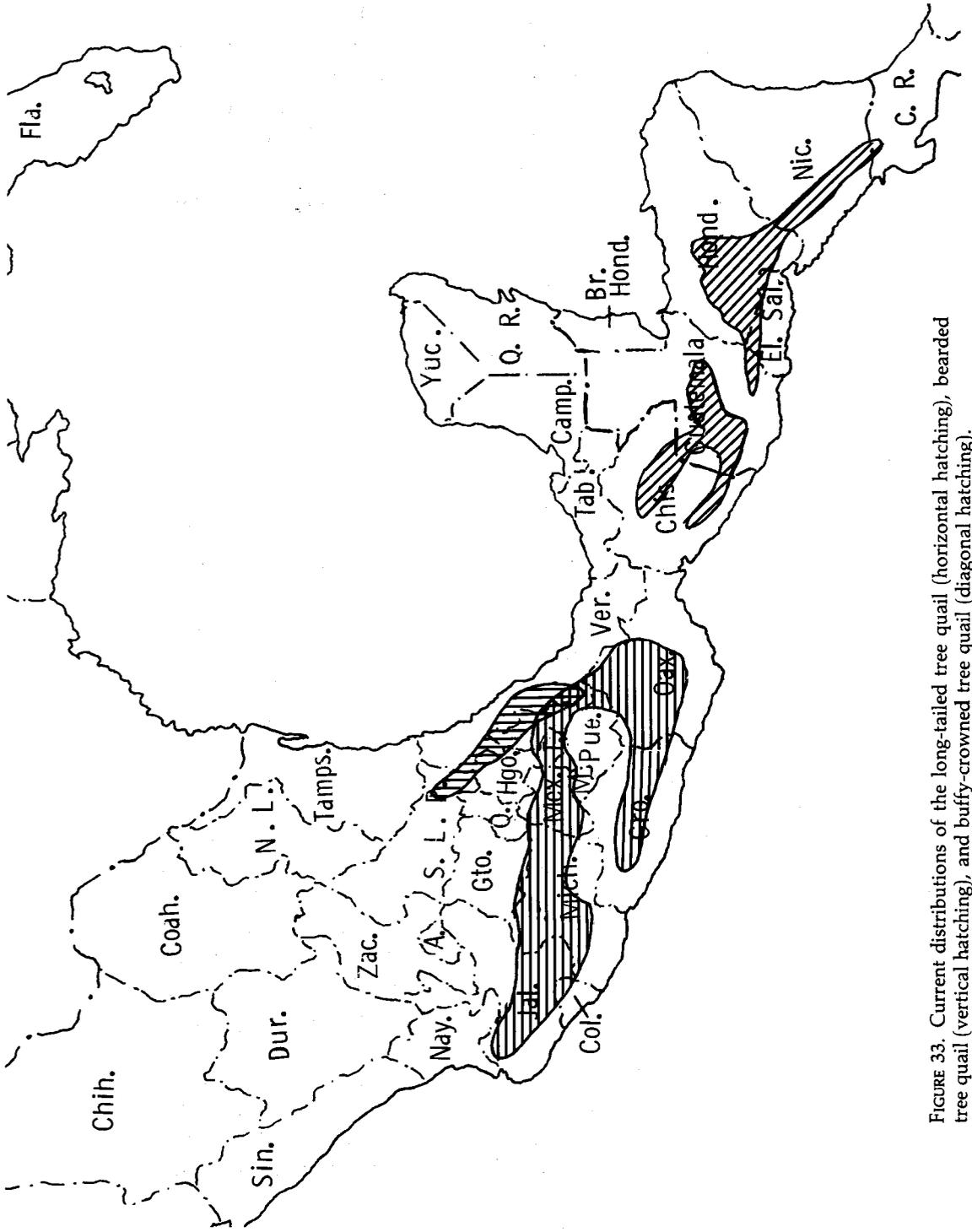


FIGURE 33. Current distributions of the long-tailed tree quail (horizontal hatching), bearded tree quail (vertical hatching), and buffy-crowned tree quail (diagonal hatching).

forests of that area (above Mapastepec, at two thousand meters elevation), but also in pine forests near Jitotól, north of Tuxtla Gutierrez, on the Gulf drainage. He had also heard of a specimen's being brought into a mission school at Pueblo Nuevo Solistahuacán, not far from Jitotól. An extensive area of cloud forest occurs between this village and Tapilula, and at Tapilula I was told by a well-informed local resident who keeps birds that tree quails are not uncommon in the nearby forests and that he had sometimes bought young birds that were brought in to him. This area would probably represent the extreme northern limits of the species' total range.

HABITAT AND POPULATION DENSITY

The preferred habitat of all three tree quails consists of cool, moist montane forest, particularly cloud forests. However, they also occur in the moister pine or pine-oak forests that are usually adjacent to the cloud forests of Mexico.

The habitat of the buffy-crowned tree quail south of Mexico has been variously described by ornithologists. Dickey and van Rossem (1938) indicate that in El Salvador the bird is found from the upper limit of the arid lower tropical zone to an elevation of at least 8,000 feet in the humid upper tropical zone but is most common in the arid upper tropical oak association. In Honduras, Monroe (1968) reported that it occurs at about 1,000 meters in pine, oak, and cloud forest but prefers drier habitats. In Costa Rica the species is said to occur in thick growth and brush and possibly also in grassy, parklike montane pastures, but Slud (1964) only personally observed it in Honduras cloud forest at 6,000 feet. In Guatemala, Griscom (1932) reported hearing it frequently in mountain undergrowth above 3,000 feet, while Saunders, Halloway, and Handley (1950) noted that it occurs at from 2,000 to 8,000 feet in second growth and heavy forests, with one reported occurrence at 1,000 feet. Wetmore (1941) found the species in dense "rain forest" (probably cloud forest, since the elevation was nearly 9,500 feet) on the Sierra Santa Elena, Guatemala. Alvarez del Toro informed me* that near Mapastepec, Chiapas, he found it in cloud forest in association with three other rare species, the horned guan (*Oreophaisis derbianus*), the black chachalaca (*Penelopina nigra*), and the quetzal (*Pharomachrus mocinno*). The only estimate of density that I am aware of is for an area of mature pine-oak forest near San Cristobál de las Casas in Chiapas, at an elevation of 7,700 feet, where the breeding density was estimated at one pair in a fifteen-acre study area (*Audubon Field Notes*, 1959, 13:478).

*Miguel Alvarez del Toro, 1970: personal communication.

Little has been written of the habitat of the bearded tree quail. It has long been known to occur in the cloud forests near Jalapa, Veracruz (Gould, 1850). Edwards (1968) lists the species among those of Xicotepec de Juarez, Puebla, where remnant cloud forests still occur at an elevation of about four thousand feet. He also lists it and associated moist-forest species as occurring at elevations of about five thousand feet near Teziutlán, Puebla.

I inquired in 1970 as to the occurrence of the bearded tree quail near Xilitla (elevation 2,300 feet) and was told by residents that it is still fairly common in forest remnants. Stopping at various villages southwest of Tama-zunchale to Jacala, Hidalgo, we were also assured by natives that the species was to be found in moist forests in that area of eastern Hidalgo. Near Puerto El Rayo (elevation 5,500 feet) I obtained five specimens of this species, which are perhaps the first obtained from that Mexican state.

The long-tailed tree quail is likewise a species which inhabits cloud forest and adjacent vegetational zones. Schaldach (1963) reports that it occurs in both the arid and humid pine-oak forests of the Volcanes de Colima, and during winter it occasionally is found as low as the lower edge of the arid pine-oak forest, but its normal habitat is in the higher cloud forests. Rowley (1966) reported that it occurred throughout the year in cloud forests near La Cima, Oaxaca. A study of the breeding birds of this vicinity, at an elevation of 6,000 feet, provides the only estimate of population density known to me, namely two pairs per one hundred acres (*Audubon Field Notes*, 1965; 19:598). Binford (1968) indicates that in Oaxaca the species occurs from 5,800 to 9,000 feet, in humid pine-oak and cloud forest habitats. Edwards and Martin (1955) and Edwards (1968) report that the long-tailed tree quail occurs in fir forest and, less commonly, pine-oak south of Lake Pátzcuaro, Michoacán, at an elevation of almost 9,000 feet on Cerro Moluca. Warner (1959) reported that they are found in the least disturbed humid fir-pine-oak forests between 2,800 and 3,300 meters (9,000–10,600 feet) in the Zempoala lagunas south of Mexico City.

FOOD AND FORAGING BEHAVIOR

Little is known of the food requirements of the tree quails. Dickey and van Rossem (1938) list seeds and flower buds among the stomach contents of a specimen of the buffy-crowned tree quail taken in El Salvador. Warner (1959) stated that flowers, flower buds, and small fruits are taken from arboreal perches by the long-tailed tree quail, although it also performs much scratching in the leafy litter. Seeds, vegetable matter, and arthropod remains were also found in specimens he examined. Leopold (1959) noted that a specimen of the long-tailed tree quail that he obtained had a crop full

of legume seeds, mostly of tick trefoils (*Desmodium*). Wetmore (1941) noted that the crops of two buffy-crowned tree quails that he shot contained small drupes.

We were told by natives in eastern Hidalgo that bearded tree quail almost never venture out of the dense forest but do visit fields when the black beans are ripening. Of the captive specimens which I had, I found that they not only liked such seeds as black beans and whole corn (both soaked for several hours) but in particular relished soft fruits, such as grapes and bananas. The heavy bills of the tree quails are effective in tearing fruits apart, and they can also handle relatively large seeds such as beans.

MOBILITY AND MOVEMENTS

Virtually nothing is known of possible movements in these birds, but in all likelihood they are virtually sedentary in their mountain-forest habitats. Schaldach (1963) did mention a possible movement to lower elevations during the dry winter season.

Except perhaps at night, tree quails are largely to be found on the ground, and can move through the underbrush with amazing agility. Dickey and van Rossem (1938) stated of the buffy-crowned tree quail: "It has a 'long-legged' appearance with erect posture when unobserved, but on the least alarm will flatten out and dart away through the brush with rapidity and silence. The body is compressed laterally to a point equalled only by some of the rails, and is thus well adapted for slipping through the close growing stems of its usual habitat." Of the same species, Saunders, Halloway, and Handley (1950) noted that it was difficult to flush in short cover, since the birds would quietly run away. In heavy cover they could be flushed more easily but provided only the briefest targets before being lost to view. After landing they apparently continued by running farther, since those that were chased were not flushed again. In the presence of dogs, however, they are more prone to fly into trees, from which they can more readily be shot (Schaldach, 1963).

SOCIAL AND REPRODUCTIVE BEHAVIOR

Except during the breeding season, these birds are usually to be found in small coveys. Miguel Alvarez del Toro informed me* that in his experience the buffy-crowned tree quail was usually found in groups of four to six birds, but as many as about a dozen birds have been seen in a group. Dickey

*Miguel Alvarez del Toro, 1970: personal communication.

and van Rossem (1938) indicated that the birds usually move in small flocks, which break up as the breeding season approaches. These authors located a roosting tree, which was some ten feet higher than the surrounding ones. Every evening a considerable number of birds were known to converge on this tree, since the calls of the entire area became concentrated there. Calling typically occurs both at dawn and again at dusk, in a manner similar to chachalacas (Warner, 1959; Dickey and van Rossem, 1938).

The timing of the breeding season in Mexico is still not entirely clear. Schaldach (1963) observed that nesting of the long-tailed tree quail occurred in Jalisco in June and July, with the first young birds being seen in mid-June. Warner (1959) judged that nesting begins in late April or early May, and he found a nest with fresh eggs on July 1. He also obtained two young birds in early June in the same general area. Rowley (1966) reported finding two nests of this species, the first of them in mid-April, while the date of the second was not indicated.

I was told by natives in eastern Hidalgo that the bearded tree quail in that region nests in May and June, and a source in Tapilula, Chiapas, indicated that buffy-crowned tree quail breed during the rainy period of June and July. Downy chicks of the bearded tree quail have been taken near Xilitla, San Luis Potosí, in June (Lowery and Newman, 1951), and older young of the long-tailed tree quail have been collected in August, September, and December (Leopold, 1959), suggesting a fairly long breeding season for at least that species. Two recently hatched (remiges just beginning to appear) downy young of this species in the United States National Museum were collected in late May at Omilteme, Guerrero.

The breeding season of the buffy-crowned tree quail in Mexico can only be guessed at, since no eggs or young birds have yet been collected there. A female collected during May in Guatemala exhibited a brood patch (Baepler, 1962), and the Field Museum has five quarter- to half-grown young from Honduras, all of which were collected between April and July, suggesting that this species breeds at the same time as do the other two.

The only nests of this species which have so far been found are those of the long-tailed tree quail. Warner (1959) located a nest in a semiopen pine-fir forest which contained a dense growth of shrubs and many young trees, especially firs. The nest was at an elevation of 2,900 meters, on a very steep slope in a brush tangle. Dead branches in this brush tangle jutted out over a two-foot-high rock face, so that a sloping roof for a cavity three or four feet long and two feet wide at the ground was formed. Dead twigs, branches, and leaves had formed a mat on the branches above, making a light-imperious roof. Only a single opening about six inches wide led to the nest, from which two trails diverged into the forest. The nest, about twelve

inches from the opening, was a shallow depression lined with fine grasses. Six eggs were present about twenty-five hours after four eggs had been counted the previous day.

Two additional nests of this species were found by Rowley (1966). One consisted of a few dead leaves and needles in a slight depression at the base of a small shrub, while the other was located amid a rock outcrop in a crop clearing. Both were poorly concealed, and each contained four slightly incubated eggs. The eggs of this species are pale buffy to cream-colored, with small light brown to reddish brown spots, according to these authors. Schaldach (1963) reported seeing young numbering five and seven following their presumed mothers, suggesting that up to seven eggs are normal clutch sizes. Dickey and van Rossem (1938) were told by natives that the buffy-crowned tree quail nests on the ground and lays four or five eggs. I was told by a native in eastern Hidalgo who was keeping captive bearded tree quails that they nested in litter on the ground, laying three or four eggs. A captive pair that I exported from Mexico and placed in the care of Frank E. Strange constructed a fairly simple nest of palm leaves around a depression they had dug in the corner of their cage. The female laid a total of sixteen eggs (which were removed as they were laid), at intervals of from one to eighteen days. Five of these eggs hatched after incubation periods of from twenty-eight to thirty days.

The eggs of the buffy-crowned tree quail apparently average slightly smaller than those of the long-tailed tree quail (44 by 33 mm compared with 49.2 by 33.5 mm) and are reddish buff, with spots and blotches of reddish brown (Leopold, 1959). The eggs laid by the bearded tree quail pair were all a uniform dull white color, and averaged 46.6 by 31 mm (five eggs).

Vocal Signals

The vocalizations of the tree quails are perhaps the most impressive of all the New World quails. Rowley (1966) reported hearing the long-tailed tree quail singing particularly in late evening but also in early morning hours, throughout the year but especially during the spring. Warner (1959) indicated that singing of this species was first heard in February and lasted until July, but singing occurred only at dawn and dusk and was rare even at those times. Griscom (1932), quoting Anthony, indicated that the buffy-crowned tree quail calls at all hours, and the Guatemalan native name *guachoque* or *guachoco* is derived from its call. In Costa Rica the species is known as the *chirascuá* (Slud, 1964), apparently for the same reason.

Warner (1959) has provided a description of the long-tailed tree quail's typical morning and evening calls. He indicated that a series of soft, guttural hooting sounds precedes the louder calls, but can only be heard at close

distances. These preliminary notes sound like *whoop*, *whOOop*, *whOOOp*, *WHOOOP*, and are followed by a loud, ringing *koor-EEE-oh*, *koor-EEE-oh*, *koor-EEE-oh*, *koor-EEE-oh*. Schaldach (1963) noted that when a bird is treed by a dog, it typically utters grouse-like alarm notes.

Tape recordings made by L. I. Davis in Guerrero and filed in the Laboratory of Ornithology's Library of Natural Sounds are from birds of unknown sex. The typical calls are piercing screams, the phrases averaging slightly under one second apart and sounding to me like *ko'-or-eee'*, in a series of as many as fourteen phrases. From two to four *whoop* notes may precede such a series but also may serve to connect two series of phrases. On this tape two birds sometimes sing simultaneously, but not in an obviously structured duet.

Little has been written on the calls of the bearded tree quail, but I obtained several recordings from captive birds while in Mexico. Both sexes utter loud, piercing distress calls when held in the hand. These down-slurred whistles often alternate with or terminate in rattling calls that have strongly pulsed characteristics. When disturbed, the same rattling calls are usually used, and they sometimes also utter a very faint, rising whistle when they appear to be agitated.

To determine the effects of separation, I removed two females from their mates and placed them outside about twenty feet away, then hid myself. Within fifteen minutes one of the females emitted some very soft notes, which were immediately answered by one of the males. This rapidly built up into an alternated call-and-answer series of notes, and the other pair of birds soon joined in, making a terrific din. The separation call of the male was a three- or four-syllable sound, which although seemingly pulsed, actually consisted of continuous sound energy. It sounded like *ko-orr-EE-EE* or *ko-or-EEE*, with the last syllable or two of somewhat higher pitch and amplitude. The native name *Chiv-is-coy'-o* no doubt refers to this call. The sound is a nearly pure whistle, with most of the energy at a frequency of about 2,000 Hz. The females' answering note was a somewhat weaker and slightly higher-pitched sound, centering slightly above 2,000 Hz. It lasted about one second, and sounded like *ko-or-ee-ee-ee-eee*, with a varying number of *eee* syllables, and with most of the notes of about the same frequency and amplitude. This separation chorus lasted for at least ten minutes, and when I appeared again to stop the recorder the males continued to pace their cages and call loudly, in spite of the termination of the females' calls.

The morning and evening chorus of these captive birds was heard on only a few occasions, when they were placed in unusually quiet and undisturbed surroundings. Because of the massed singing by most or all of

the five birds, it was almost impossible to get a clear recording of the individual calls, which generally sounded much like the separation calls. The whistle notes were, however, preceded by one or more preliminary softer calls that no doubt correspond to those described by Warner for the long-tailed tree quail, and thus the complete call sounded something like *whoop, whoop, KO-OR-EE*. Calling started before sunrise and terminated when it became fairly light outside, usually within fifteen or twenty minutes. It is clear that females as well as males participate in these choruses, which probably function to allow individuals or flocks to locate one another for evening roosting or to announce flock locations at dawn.

EVOLUTIONARY RELATIONSHIPS

Holman (1961) judged on osteological evidence that the genus *Dendrortyx* is the most generalized of the entire group of New World quail, and this would seem to be an attractive idea. The view that the New World quails evolved from a semiarboreal offshoot of the early cracid stock in a forested semitropical environment would fit very well with the present zoogeographic relationships of these birds and also with similarities in the behavior patterns of these two galliform groups. The Cracidae appear to be largely fruit-eaters but do also scratch about in litter for other vegetable matter and arthropods. Unlike the tree quails, they nest largely in bushes or trees but do sometimes nest on the ground. They also have fairly small clutches, and the young may be attended by both parents or by the female alone. The well-developed tails and the importance of vocalizations of cracids are further similarities with the tree quails, but probably reflect in part similar niche adaptations to a common arboreal existence in heavily vegetated habitats.

The nearest relatives of the tree quails appear to be the forest-dwelling wood quails of the genus *Odontophorus*, which differ from them primarily in their adaptations for a more highly terrestrial existence. Similarly, the plains- and desert-adapted species of New World quail might be derived from a tree quail ancestral type, although less directly. The barred quail seems to have a definite evolutionary affinity with the tree quails; indeed, Holman (1961) regards *Philortyx* as the possible nearest living relative of this group. However, *Philortyx* exhibits fewer ecological and general behavioral similarities to the tree quails than do the species of *Odontophorus*, and both downy and adult plumage patterns of the tree quails and wood quails are very similar.