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29 Singing Quail

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# Singing Quail

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*Dactylortyx thoracicus* (Gambel) 1848

## OTHER VERNACULAR NAMES

*E*HIVISCOYO, Cinco Real, Codorniz, Chifladora, long-clawed quail, long-toed partridge, long-toed quail.

## RANGE

Mountainous areas from Mexico to El Salvador and Honduras.

## MEXICAN SUBSPECIES (Based on Revision by Warner and Harrell)

*D. t. thoracicus*: Veracruz singing quail. Resident in northeastern Puebla and central Veracruz.

*D. t. devius* Nelson: Jaliscan singing quail. Known only from heavy oak forests of Jalisco.

*D. t. sharpei* Nelson: Yucatán singing quail. Resident in tropical forest lowlands of Cameche, Yucatán, and Quintana Roo.

*D. t. chiapensis* Nelson: Chiapan singing quail. Resident in mountain forests of central Chiapas.

The following Mexican races have recently been described but are not yet verified:

*D. t. pettingilli* Warner and Harrell. Resident in forests of the Sierra Madre Oriental of southwestern Tamaulipas and southeastern San Luis Potosí.

*D. t. melodus* Warner and Harrell. Resident in mountain forests of central Guerrero.

*D. t. ginetensis* Warner and Harrell. Resident in mountains near the Chiapas-Oaxaca border.

*D. t. moorei* Warner and Harrell. Known only from mountain forests of Cerro Brujo and Distrito Comitán, Chiapas.

*D. t. dolichonyx* Warner and Harrell. Resident in the forests of the Sierra Madre de Chiapas, Chiapas.

*D. t. edwardsi* Warner and Harrell. Known only from the cloud forests of Chiapas near the Oaxaca border.

*D. t. paynteri* Warner and Harrell. Resident in the lowland rain forest of south central Quintana Roo.

#### MEASUREMENTS (Mexican Races Only)

Folded wing: Adults, both sexes, 113–37 mm (males average 4 mm longer than females).

Tail: Adults, both sexes, 45–56 mm (males average 2 mm longer than females).

#### IDENTIFICATION

Adults, 8–9 inches long. Sexes quite similar in appearance. This species has relatively large feet and unusually long claws, which are used in scratching and digging for food. Both sexes have short, bushy crests and differ mainly in head color. Males have a mostly cinnamon head except for a brown crown, while in females the cinnamon areas are replaced with a grayish white. The upperparts of both sexes are finely mottled with browns and grays, and the upper wing surfaces are much more heavily marked with black and whitish coloration. The underparts and flanks are mostly brownish gray, fading to white or buffy on the abdomen, and the chest and flanks are rather broadly striped with whitish shaft-streaks.

#### FIELD MARKS

This forest-dwelling species is rarely seen but often heard and can be

most easily identified by its thrush-like call, which usually consists of a series of single whistled notes that gradually increase in loudness and rate of repetition, followed by three to twelve rapid phrases varying in pitch and sounding like a repeated *pitch-wheeler* (Sutton, 1967) or *che-va-lieu-a* (Gaumer in Boucard, 1883). It also utters a low-pitched twittering call during foraging and has a loud, sharp alarm whistle (Lefebvre and Lefebvre, 1958). If seen, the bright tawny-cinnamon color of the male's head and the pale gray color of the female in these same areas would serve to identify it.

#### AGE AND SEX CRITERIA

*Females* have gray on the chin, throat, cheeks, and above the eyes, whereas adult males are tawny orange in these areas.

*Immatures* have the two outer primaries relatively pointed, and in addition the basal half of the mandible of first-fall birds is paler than that of older birds (Dickey and van Rossem, 1938). The upper greater primary coverts are reportedly spotted near the tip in young birds, but Warner and Harrell (1957) indicated that this criterion and the outer primary shape are not diagnostic for immature birds. They reported, however, that the base of the bill in young birds is light-colored.

*Juveniles* (at least of *devius* and *chiapensis*) evidently resemble adult males, but the tawny orange of the head and throat is replaced by cinnamon buff, and the cheeks are somewhat mottled with blackish. The crown and occiput of both sexes is barred or blotched with blackish, more conspicuously so in males than in females (Ridgway and Friedmann, 1946). Warner and Harrell (1957) reported that the sexes are not certainly separable but that juvenile birds have black spotting on the breast, sides, and flanks, while the head and neck are colored as in adult females.

*Downy young* (illustrated in color plate 110) of the singing quail are most like those of *Odontophorus* and *Dendrortyx*, in that all three species have dark chestnut crown and back patterns and strong preocular and postocular stripes. Downy singing quail and spotted wood quail have faint buffy lines along both sides of the rump but otherwise lack dorsal patterning. Perhaps the downy singing quail can be distinguished from the spotted wood quail by its somewhat more rufous dorsal tones and its brighter and clearer superciliary stripe, but too few specimens are available to be certain of this.

#### DISTRIBUTION AND HABITAT

The Mexican range of the singing quail has been plotted by Leopold (1959), and the total range of the species was illustrated by Warner and

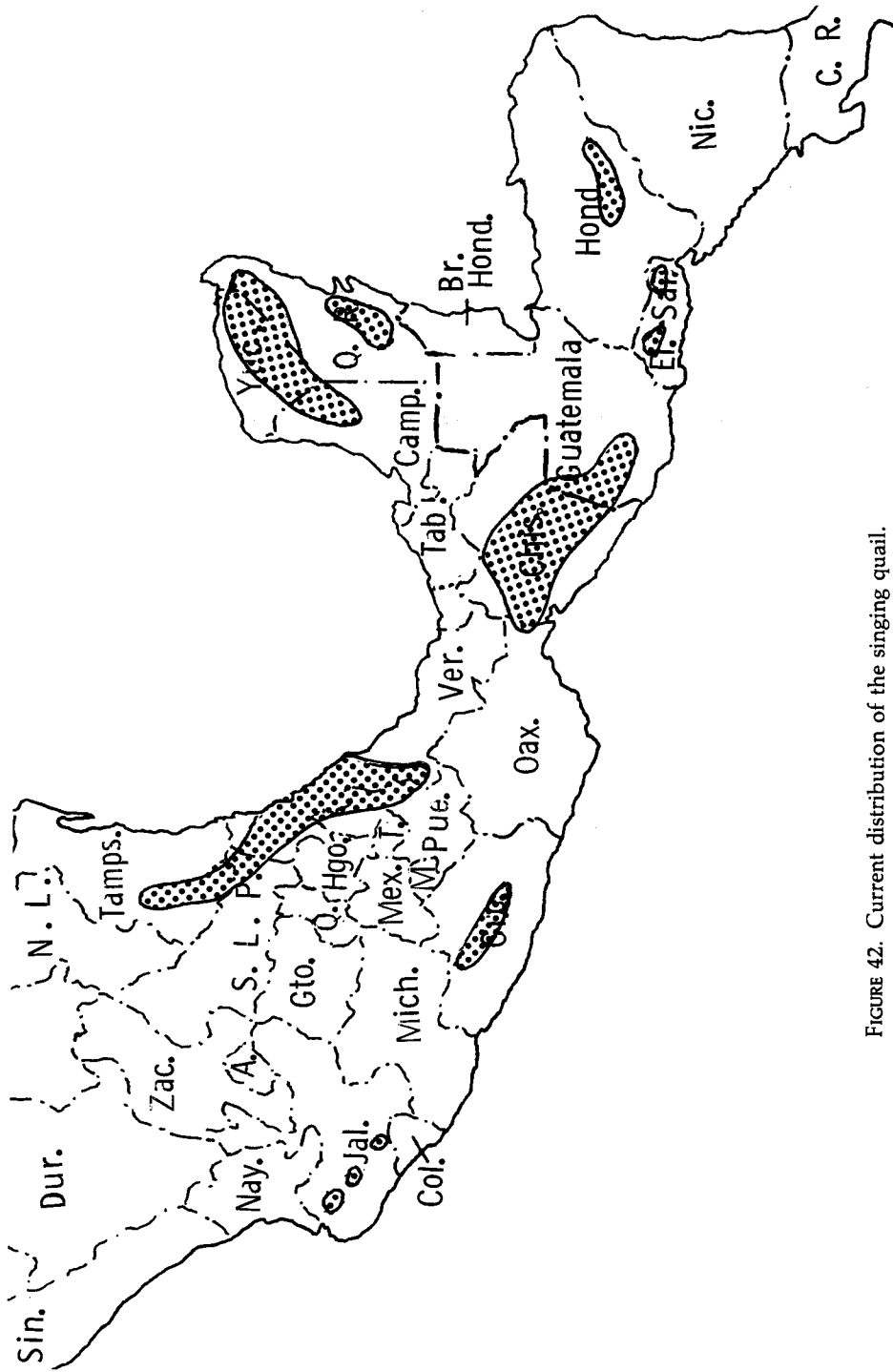


FIGURE 42. Current distribution of the singing quail.

Harrell (1957). Both maps indicate a discontinuous range which is largely but not entirely correlated with the distribution of cloud forest in Mexico and northern Middle America, as mapped by Martin (1955). The singing quail reaches its northern limit of range at the northern latitudinal limits of cloud forest, at 23° north, in southwestern Tamaulipas. At that locality cloud forest is developed at elevations between three thousand and five thousand (nine hundred and fifteen hundred meters), occurring above tropical deciduous forest and below oak-pine forest (Martin, 1955). The singing quail is most numerous in the cloud forest zone but does occur during the breeding season as low as one thousand feet and at least as high as seven thousand feet (Martin, 1955). Warner and Harrell (1957) indicated an altitudinal range of from three hundred to about six thousand or seven thousand feet in this area, occurring in semideciduous tropical forests, oak-sweet gum and beech forests, and pine-oak forests, plus one record from oak-madroño forest. In San Luis Potosí the altitudinal distribution and habitat occurrence is similar; the species has been recorded by several investigators in the vicinity of Xilitla in cloud forest. This locality is about 150 kilometers south of the Tamaulipas limit of cloud forest, and locality records between the two points suggest that the bird has an uninterrupted distribution in the subhumid forests between them.

Another major area of cloud forest in eastern Mexico is associated with the Sierra Madre Oriental in eastern Hidalgo, northeastern Puebla, and central Veracruz south to near the Oaxaca border. In this area the singing quail occurs in Puebla and Veracruz at altitudes similar to those mentioned, including evergreen tropical and probably semideciduous tropical forests of adjacent lowlands (Warner and Harrell, 1957).

In the Sierra Madre Occidental the singing quail has a much more restricted range, perhaps because of the generally drier conditions prevailing there. A single specimen has been taken in Jalisco, in heavy oak forest above 3,850 feet (Warner and Harrell, 1957), and another was obtained at La Cumbre, near Autlán (Schaldach, 1963). Schaldach has also reported hearing the birds in tropical deciduous forest habitat of Colima and considered them peculiar to that habitat.

In Guerrero, the singing quail is known only from pine-oak-fir forest of from six thousand to nine thousand feet elevation, in the vicinity of Omilteme (Warner and Harrell, 1957).

In Oaxaca, the species is a fairly common resident of the Pacific region in the Sierra Madre de Chiapas, occurring in humid gallery forest, tropical semideciduous forest, and the extreme lower edge of cloud forest, at elevations of from 800 to 4,900 feet (Binford, 1968).

A large number of locality records exist for Chiapas, and Warner and

Harrell recognize five different subspecies from that state. The most widely ranging form, *dolichonyx*, occurs widely in the Sierra Madre de Chiapas between four thousand and nine thousand feet elevation. Near the Guatemala border, this form is replaced by *calophonus* on the Volcan de Tacaná, at three thousand meters (ten thousand feet) elevation. In the interior highlands of Chiapas, the race *chiapensis* occurs in humid and semideciduous forests and also in pine forests (Alvarez del Toro, 1964). Finally, the race *moorei* is known from two mountain forest localities of central Chiapas, and *edwardsi* from a single cloud forest locality near Monserrate (Warner and Harrell, 1957).

On the Yucatán peninsula, the race *sharpei* occurs in tropical evergreen climax forest in Campeche lowlands, in tropical deciduous forests of Yucatán, and in mixed tropical evergreen and deciduous forests of northern Quintana Roo (Warner and Harrell, 1957). In southern Quintana Roo, in evergreen rain forest, a surprisingly light-colored race *paynteri* apparently occurs, although the variation in coloration found in this area is still not well understood (Paynter, 1955).

To the south of Mexico, the singing quail is primarily associated with cloud forests. In Guatemala it is found in the cloud forests of the Pacific Cordillera, primarily at elevations of from 7,000 to 8,500 feet (Saunders, Halloway, and Handley, 1950). Warner and Harrell (1957) refer this population to *calophonus*, and indicate that it ranges up to 10,000 feet on the Volcan Tacaná. In Honduras the bird is uncommon and is confined to cloud forests above 1,300 meters (Monroe, 1968). In El Salvador the bird is typically associated with oak forests of between 2,500 and 4,000 feet elevation in the arid upper tropical zone, but they also utilize coffee groves of this same climatic zone (Dickey and van Rossem, 1938).

#### POPULATION DENSITY

Warner and Harrell (1957) estimated that during each of two years there were approximately 3.5 pairs per one hundred acres in a climax oak-sweet gum forest of southern Tamaulipas. LeFebvre and LeFebvre (1958) noted four and five pairs present in a twenty-acre plot of partially lumbered cloud forest and reported that elsewhere in cutover sections of forest there was at least 1 pair per twenty acres. Some more recent studies of the same area have been made, which suggest somewhat higher densities. During two years, a thirty-acre area of oak-sweet gum cloud forest was censused, and similar figures of 4 and 4.5 males (13 to 15 presumed pairs per one hundred acres) were judged to be present (*Audubon Field Notes*, 20:648-649, 1966; 19:599-600, 1965). The species also appeared in a census of pine-

oak forest near San Cristobál, Chiapas, where a single territorial male was judged present on a fifteen-acre study area (*Audubon Field Notes*, 13:478, 1959). These figures would suggest that a population density of up to 1 bird per three or four acres might occur in favorable habitats, and certainly at least 1 per ten acres.

## HABITAT REQUIREMENTS

Leopold (1959) has summarized the habitat needs of this species very well as follows: "The best habitat for singing quail is cool, moist forest that has been neither grazed nor burned. This perhaps is because of their preference for feeding in deep, rich litter, which would be compacted or destroyed by either grazing or burning." In such habitats, both food and protective cover are fully provided, and any moisture that may be needed can readily be obtained from succulent vegetation or insects.

The observations of LeFebvre and LeFebvre (1958) indicate that the species can tolerate at least some disturbance of climax forest, and with partial lumbering they were evidently at least maintaining their past population densities. However, they noticed that quail did not occur where the terrain was rocky and uneven or where little or no soil or leaf litter had accumulated among the moss-covered rocks. Their observations, and earlier ones by Dickey and van Rossem (1938), suggest that establishment of forest edges produced by lumbering or forest alteration by coffee-planting activities may to a limited extent benefit the species.

## FOOD AND FORAGING BEHAVIOR

As might be expected, the foods of singing quail contain a variety of fleshy vegetable materials available in the litter and soil. Leopold (1959) noted onion-like bulbs, some small seeds, and the larvae and pupae of insects. Coffee berries may be preferred foods where they are available (Dickey and van Rossem, 1938). Arthropods, such as beetles, centipedes, crickets, and grubs, may also be taken in some numbers (Warner and Harrell, 1957). In disturbed areas the weedy pokeweed (*Phytolacca*) may be utilized fairly heavily according to LeFebvre and LeFebvre (1958), who also noted a variety of insect and spider materials in two specimens examined.

The mode of feeding is evidently much like that of *Odontophorus*. The bird reportedly leans to one side, lifts the opposite leg, and extends the foot far forward, even beyond the bill. With a single strong backward thrust it then tears and scatters the litter, after which it picks up edible materials (Warner and Harrell, 1957). A manner of foraging more like that

of the domestic hen (*Gallus gallus*) was described by LeFebvre and LeFebvre (1958), who noted that the birds sometimes made four or five strokes with first one foot and then the other before they began to pick up materials. Often these workers noted that a paired male would apparently call the female to him after finding a large insect or other morsel, suggesting that tidbitting behavior is as well developed in the singing quail as in the United States species of terrestrial quails.

#### MOBILITY AND MOVEMENTS

The strong legs of the singing quail serve not only for foraging but also as their principal means of escape. They may squat when frightened, but when pressed closely they quickly run for cover, often in a zigzag manner (Warner and Harrell, 1957). If they are flushed, they take off suddenly and are quite agile in the air, banking around rocks and trees. Warner and Harrell reported that the flight distance varied with proximity to cover but was usually fifty to seventy-five yards and often less. In a few cases they have been observed to fly into trees and remain there at heights of from four to twelve feet (LeFebvre and LeFebvre, 1958). It is doubtful, however, that they normally roost in trees.

#### SOCIAL AND REPRODUCTIVE BEHAVIOR

During the period between the appearance of the first broods and the start of the next breeding season, singing quail are typically found in small flocks of from four or five to as many as a dozen birds (Warner and Harrell, 1957). Such flocks are presumably basically family groups or multiples of families that have merged. In Mexico the breeding season lasts at least from March to August (Leopold, 1959), possibly even from February through October (Warner and Harrell, 1957). With the onset of the breeding season the coveys break up, and song begins in northern Mexico in March. This reaches its peak in April and May and gradually diminishes, but records for singing have been obtained as late as December 26 (Warner and Harrell, 1957). In the Yucatán peninsula the breeding season is clearly associated with the wet season, which typically begins in May. The few available records from that region indicate that nesting extends from early May to early August (Paynter, 1955).

No nests have yet been described, although Paynter (1955) reported that a female collected in early May was incubating five eggs. The number of young in the broods is small, usually only from two to four (Warner and Harrell, 1957). Both parents protect and care for the young when they leave the nest, and at least the female will perform injury-feigning when defending the brood (LeFebvre and LeFebvre, 1958).

## Vocal Signals.

The "song" of the singing quail is justly famous and certainly one of the most impressive of all quail vocalizations. The first description of it (Boucard, 1883) is hard to improve upon: "Sings at nightfall, a low whistle, repeated three times with increasing loudness, followed by '*che-vā-lieu-a*' repeated three to six times in rapid succession. The tone is musical, half sad, half persuasive, beginning somewhat cheerful, and ending more coaxingly." A more recent description has been provided by Warner and Harrell (1957): "The first part of the song is a series of about four loud, penetrating whistles, which increase in frequency and pitch and seem to be an announcement of the start of a song; these whistles often are repeated by other birds. Sometimes an imitation of these notes will initiate singing in nearby birds. The last of these notes is followed immediately by the second part of the song, a series of three to six rapid phrases, each made up of notes of differing pitch, the middle ones higher and more definitely accented. . . . These phrases are followed by a low twittering which is often not audible or may be absent. There is no evidence that the female sings." However, an absence of female participation in the song would be surprising, considering the situation found in the tree quail group as well as the wood quails.

Tape recordings by L. I. Davis made in various parts of Mexico and filed in the Laboratory of Ornithology's Library of Natural Sounds indicate that considerable variation occurs in the vocalizations. The preliminary notes may be repeated only a few times or uttered as many as twelve times before the complex phrasing begins. The preliminary notes begin in a slow, measured cadence, spaced about two seconds apart, but soon accelerate to nearly two per second just before the "song" proper begins. This typically consists of up to as many as twelve melodic *che'va-lieu'-a* phrases, each phrase lasting about one second and almost merging with the next. There seem to be two major song types, one more pulsed, less melodious, and sounding like a repeated *pa-che'-va* (or *pitch-wheeler*), indicating that the more typical phrasing may actually be a duet. In one sequence (February 17, 1961), it sounds as if the bird singing the preliminary notes also sings the *lieu'-a* portion of the song, while a second bird apparently sings the *che'-va* portion. Sonographically, these two portions appear very similar, each consisting of two major rising and falling notes that fluctuate in fundamental frequency between about 1,500 and 2,800 Hz, with almost no harmonic development.

The observations of H. E. Anthony (quoted by Griscom, 1932) suggest that antiphonal duetting is a common feature of the song of this species, although he was unable to determine if the birds concerned were of the same sex. "At Finca Perla, two of these birds were kept in separate cages on different sides of the house. I was told that it was for the sake of their

'song,' which they would sing in the early morning, but that there would be no song, if the birds could see each other. I had often listened to the calls of this quail, from the edge of the forest, and wondered at its mellow richness, reminiscent of the flute-like call of the plumed partridge of the Sierra Nevadas. I was not, however, expecting a duet, such as I witnessed several times at this place. In the early morning, when the calls were most frequent on the mountain sides, one of the cage birds would utter its invitation, 'cua-cua-cua' at intervals of two or three seconds. Soon the other bird responded, 'cua-kaka-wak-cua-kaka-wak,' while the other joined in perfectly in time and tone, 'cua-cua-cua,' both continuing for some twenty or thirty seconds and stopping in exact unison. It seems hard to believe that two birds were calling, so perfect was the time and tone." This description certainly suggests that the "invitation" notes are not sung by the same bird that sings the *cua-kaka-wak* or *che-va-lieu-a* sequence. If Wetmore's (1965) observations on *Odontophorus* provide any clues, one would guess that the male is responsible for the first section and the female for the latter part of the call. LeFebvre and LeFebvre (1958) indicated that a "twitter call," uttered during foraging or when disturbed by humans, might also be a duet. Warner and Harrell thought that this twittering note served as a location call, and they also once reported a call from a flying bird.

When the birds are alarmed, especially when adults are tending young, a sharp whistle may be uttered. At least the male is known to produce this call, and both sexes also utter clucking notes when their young are threatened (LeFebvre and LeFebvre, 1958). A hand-held distress call has not yet been described, and since I have not handled any live birds I was unable to learn whether such a call is typical.

## EVOLUTIONARY RELATIONSHIPS

The observations of Holman (1961) suggest that the nearest living relative of *Dactylortyx* is *Cyrtonyx*, while it is less closely related to *Rhynchortyx* and most distantly related to *Odontophorus*. I would instead suggest that *Dactylortyx* evolved from an *Odontophorus*-like ancestor through becoming even more highly specialized for scratching and digging through the increased modification of its legs, toes, and claws and presumed associated muscular modifications. By developing an ecological tolerance for somewhat drier habitats than those typical of *Odontophorus*, it has extended its range considerably farther north than have most of the wood quails, and in Mexico it occupies a much broader altitudinal range than does the spotted wood quail.