THE SONG, NEST, EGGS, AND YOUNG OF THE LONG-TAILED PARTRIDGE

BY DWAIN W. WARNER

So little is known about the habits and distribution of the Long-tailed Partridge (*Dendrortyx macroura*) that a summary of my observations on a few of the facets of the life of this species may be of interest. The nest and eggs have not been described.

The only detailed information on any of the large Middle American forest quail is that by Skutch on the Marbled Wood Quail (*Odontophorus gujanensis*) (1947. *Condor*, 49:217–232), to which the reader is referred for descriptions of similarities, as well as differences, between that species and *Dendrortyx macroura* in habits, voice, nest, and eggs.

The following observations were made during the period from September, 1953 through July, 1954, in the region of the Lagunas de Zempoala which lies on the border between the Mexican states of Morelos and Mexico and the Distrito Federal. The weather in this high and extremely rugged region, which borders the Balsas drainage system, is one of drastic and rapid changes through much of the year. The months of February to late April are dry, and few clouds gather over the mountains. Days are sunny and warm and the nights pleasantly chilly. This is the season of forest fires which, along with cutting, have altered the primeval beauty of this magnificent mountain forest of fir, pine, and oak in which there is a strong admixture of more characteristically lowland flora on the south-facing slopes.

During the months of December, January, and February frost occurs nearly every night. From May through the rest of the year clouds shroud this mountain mass most of the time, and mist and rain fall nearly daily. During the rainy months there occur severe thunderstorms which often culminate in light to heavy falls of hail, or "graniso," to depths of several inches. On June 29, 1954, snow accumulated to a depth of four inches over most of the Sierra de Ajusco above 2900 meters, of which Zempoala is a part. At dawn cold air which settles over these highlands during the night pours as a strong wind southward off the highlands toward the lowlands of Morelos.

In the mountains about the Valley of Mexico the Long-tailed Partridge, or "gallina del monte," is still fairly common in the least disturbed humid forests of fir–pine–oak at an altitude between approximately 2800 meters and 3300 meters. The species is very shy and, from my experience, extremely difficult to approach without a dog. It is both arboreal and terrestrial but spends much time on the ground, as indicated by extensive scratchings in the leaf litter and humus of its shaded home. On the other hand, flowers, flower buds, and fruits

are eaten from perches above ground in much the same manner as in the more arboreal species of grouse.

This quail is hunted successfully by only a very few people, who nearly always use a dog. I remember watching in amazement the first time a Mexican hunting companion heard quail. He quickly laid down his gun, removed his huarachos and all of his clothing except undershorts; then retrieving his gun, and beckoning to his silent dog, he disappeared without a sound into the forest. In about five minutes the dog barked; and nearby a quail flew from the ground to a branch about 15 feet above the ground, where it was shot.

The voice of this quail is seldom heard. Loud calling or singing began in late February, but these calls were heard only rarely even during the period from February to July, so that presence or absence of these birds in an area could not be determined by their vocalizations. No calling was heard other months of the year. I never heard more than two outbursts of song in one day in one area; and songs were heard only just after dawn and at dusk.

From a distance, as across a valley, the song is a loud, ringing *korr-EEE-oh, korr-EEE-oh, korr-EEE-oh, korr-EEE-oh,* which is taken up by other individuals in the same area, as well as by others in other places. Singing may continue for some 30 seconds to a minute, then cease abruptly, leaving no clear clues as to directions from which the songs really came or the numbers of birds involved. This is not the complete song but is really only the end. When singing birds are near the observer, a series of introductory notes are heard which begin as low, guttural, hooting sounds which rise rapidly in volume until the *korr-EEE-oh* sounds start without pause. These preliminary notes may be indicated best as *whoop, whOop, whOOp, whOOOp, WHOOOP, korr-EEE-oh,* etc. The two parts of the song are so different that it is difficult to believe at first that they are part of the same song. Mexicans who hunt this quail learn of its presence by other sounds unfamiliar to me.

Groups of adults apparently come together at feeding and dusting grounds even during the nesting period, and singing heard in July involved more than two birds in one small area.

Two adults were taken in steel traps set for large mammals in forest trails, and tracks were seen along trails, indicating that this quail may use trails in much the same manner as the Marbled Wood Quail reported by Skutch (*loc. cit.*). (See Fig. 1.)

Gonadal changes in adults, and observations on a nest, eggs, and young give some clues to breeding time and habits. A male taken in November had a left testis measurement of 8 × 4 mm. Testes of two males collected in February and early April measured 10 × 3.5 and 10 × 6 mm. The ovary of a female collected on April 20 had undergone considerable recrudescence, and the oviduct was approximately 5 mm. in diameter; and a female collected on June 21 had a soft-shelled egg in the oviduct, and 10 oocytes in the ovary ranging from 5 to 15 mm. in diameter. No brood patch was apparent on this bird, but

some feathers of the lower breast and belly were being replaced. Two downy young in early postnatal molt found June 6, and reports of young as early as late May show that nesting begins by late April or early May.

Two adult males weighed 450 and 455 grams; two adult females weighed 374 and 446 grams. The digestive tract of one bird contained flowers, flower buds, small green fruits and seeds. Others contained similar vegetable matter and arthropod remains.

FIG. 1. *Dendrortyx macroura* calling near Huitzilac, Morelos.

A nest with its clutch of eggs was found about four kilometers northwest of the village of Huitzilac, Morelos, along the road to the Lagunas de Zempoala. There the road skirts the Cañada de Oclacingo, which plunges away to the south from the slopes of Cerro Cuautepetl. The nest was located about one-half kilometer across the canyon in semi-open fir–pine–oak forest at an altitude of about 2900 meters. The slope at the nest site was very steep. Three hundred feet below the nest was a small level area planted in corn. Soil on the slope was very shallow with much rock exposed, but in most cases only the outward facing sides of the rocks were bare or were lightly covered with moss and

lichens. Soil cover consisted of a little leaf mold, much pine duff, and a few leaves.

The vegetation was dominated by tall, mature firs and pines, among which were a few gnarled oaks. The oaks were largely dead, and were covered with epiphytic mosses, lichens and other plants. All of the mature trees showed much fire damage. Many young trees 15 to 20 feet in height were present with firs growing in dense clumps dominating this stratum. Except in the clumps of fir, there was a dense growth of broad-leaved shrubs nearly everywhere. Two species of ferns were abundant as ground cover, and grasses were present in small scattered openings in the forest.

The nest was located eight feet west of two oaks, 50 feet tall, standing close together. At this site there was a rather open tangle of brush, at the base of which dead branches lay prostrate on the ground. They jutted out from a two-foot-high rock exposure so that some touched the ground several feet out from the base of this vertical exposure of rock. A matting of twigs, pine needles and leaves had accumulated several inches thick on the prostrate branches. This matting, impervious to light and probably to rain, formed the sloping roof of a cavity three or four feet long and two feet wide at ground level. The inner wall was formed by the rock face. In this cavity was the nest to which the birds had access through a single opening about six inches wide at a slight angle outward from the rock side at the northeast end of the cavity.

Leading to the cavity entrance were two obvious trails, both probably created by adult quail in approaching and leaving the nest. One of the trails extended straight out from the nest entrance toward the two oaks for a distance of about three feet. The other turned sharply from the entrance and extended for about five feet through the tangle of twigs and brush at the lower edge of the cavity roof. The latter path was the more heavily used.

The nest, a shallow depression well lined with fine grasses, lay 12 inches from the cavity entrance and close to, but not touching, the rock wall. Only a small part of the dark cavity was occupied by the nest. Up to a distance of eight feet, and only from near ground level, all that could be seen of the bird on the nest was the bright red bill.

At 3:00 p.m. on July 1, when Allan R. Phillips, two other companions, and I visited the nest site, one adult quail was sitting on the nest. The bird remained there for about five minutes while we watched and took photographs. When we had approached cautiously to within eight feet, the bird quietly left the nest by the "switch-back" path, and disappeared in a few seconds. The nest contained six eggs, two of which were collected. Cesáreo Jimenez reported that at 4:00 p.m. on the previous day the nest had contained only four eggs and that an adult was on the nest. "Several" days before that, in the afternoon, only two eggs were present, and an adult was on the nest.

The two eggs which were collected were fresh. Each weighed 28.3 grams; they measure 49.0 × 33.4 and 48.5 × 33.5 mm. In color they are pale cream and are lightly and evenly spotted with light brown, the spots being of varying sizes with the larger ones nearly one millimeter in diameter. (See Fig. 2.)

When we visited the nest three weeks later, all that remained were scattered feathers of an adult quail, broken egg shells and a distorted nest cavity.

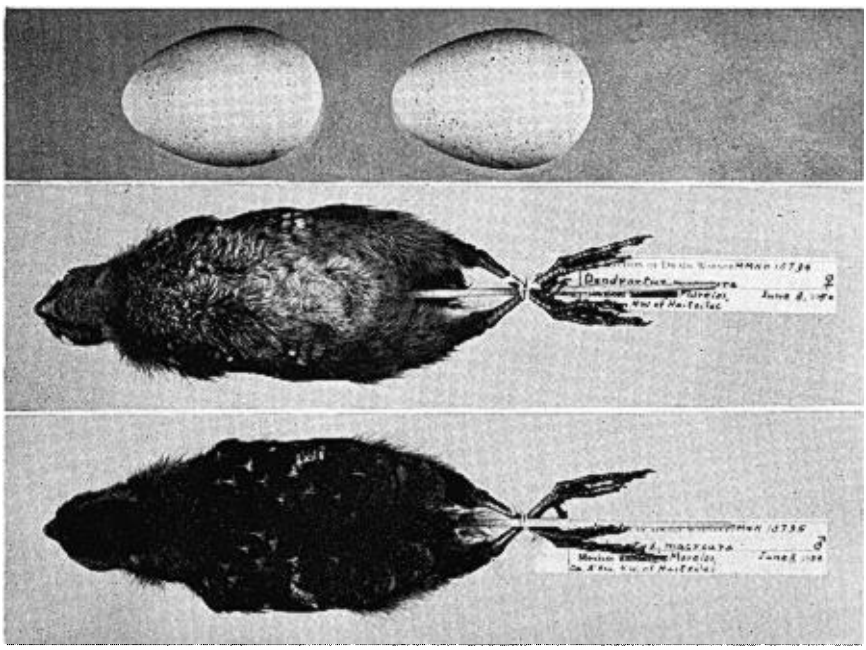

FIG. 2. Eggs and young of *Dendrortyx macroura*.

On June 8, 1954, I obtained in Huitzilac two live young, a male and female, which had been found together two days before on the south slope of Cerro Cuautepetl at an altitude of about 3000 meters. Both are in natal down except for some juvenal feathers among the interscapulars, scapulars, and on the wings and sides of the breast and belly. The wing of the male measures 51 mm. in length. On each wing only seven primaries could be found, and the No. 1 secondary had not appeared. In life the eye was olive-gray. The tip and anterior tomial region of the upper mandible, and the anterior two-thirds of the lower mandible were light orange-red; the rest of the bill was blackish. The tarsi and toes were light orange-red, darker posteriorly on the tarsi and on the soles. (See Fig. 2.)

Apparently the juvenal plumage has not been adequately described. Ridgway and Friedmann (1946. *U. S. Nat. Mus. Bull.*, 50, pt. 10, p. 246), in describing the juvenal plumage of *D. m. diversus*, state that this plumage is similar to the adult plumage with a few minor qualifications. Although the specimens at hand are in early postnatal molt, enough of the juvenal plumage shows both dorsally and ventrally to indicate that this plumage is similar in basic pattern to that in other Odontophorinae. The most obvious characters of this plumage are in the pattern of the breast, belly and back where the white shaft streaks expand near the tips, forming large V's or broad white bars at the ends of the feathers. The rest of the feather is blackish in the middle and browner at the base, the brown extending farther out on the lateral sides of the feathers of the back. The over-all impression, then, is of a spotted or barred young bird which is very different from the adult.

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Ormsby Annan, a graduate of Harvard University (A.B.) and Northwestern University (M.S. and Ph.D.), is now a member of the teaching faculty of Barat College, Lake Forest, Illinois. Dr. Annan is interested in external and internal influences on the annual cycle of birds, and in educational nature photography. He is a member of the A. O. U., Cooper Ornithological Society, Ecological Society of America, and state ornithological societies of Illinois, Iowa and Florida.