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Notes on the rail *Rallus longirostris tenuirostris* in the highlands of central Mexico.—The King Rail/Clapper Rail (*Rallus elegans/R. longirostris*) complex is represented in the freshwater marshes of the highlands of central Mexico by a richly colored form described as *Rallus elegans tenuirostris* by Ridgway (1874). Warner and Dickerman (1959) provided the first natural history information on *tenuirostris* and greatly extended its known range, Hardy and Dickerman (1965) briefly noted these rails incidental to other studies, and Dickerman (1971) further clarified the range. As presently understood, *tenuirostris* occurs exclusively in freshwater situations at elevations of 800 m to 2500 m in the states of Nayarit, Jalisco, Michoacán, Guanajuato, San Luis Potosí, (Estado de) México, Tlaxcala, Puebla, and Guerrero and the Distrito Federal. With but one exception, all specimens reported as King Rails or Clapper Rails from the Central Highlands are referable to *tenuirostris* (Dickerman 1971, Banks and Tomlinson 1974). During my studies of waterbirds in Mexico, I observed *tenuirostris* on several occasions in the highlands of Jalisco and adjacent Guanajuato. These observations provide four new localities of occurrence, document the first reported nest of this race, extend the breeding season, and describe environmental factors governing the seasonal movements, breeding ecology, and status of this rail in central Mexico.

Taxonomic considerations.—The taxonomic position of *tenuirostris* is complicated by uncertainty about the status of King and Clapper rails with which *tenuirostris* shares characters. Noting that *R. elegans* and *R. longirostris* may interbreed, Dickerman (1971) suggested that the two were ecological replacements of each other and proposed lumping all races under *R. longirostris,* the older name. This treatment was also recommended by Blake (1977) and followed by Ripley (1977). However, the American Ornithologists' Union (1983) retained *elegans* and *longirostris* as separate species. Oberholser (1937), who accepted *elegans* and *longirostris* as distinct species, was the first to consider *tenuirostris* a race of the Clapper Rail, noting that even though *tenuirostris* "is the form that most closely approaches *Rallus elegans* in [coloration]" (op. cit.:337), it presented "no characters that are not bridged over by individual variation when all the forms [of *R. longirostris*] are considered" (op. cit.: 314). The placement of *tenuirostris* as a race of *R. longirostris* has been generally accepted during the past 50 years (e.g., Ridgway and Friedmann 1941, Blake 1953, Deignan 1961, Anderson and Ohmart 1985) and I have followed this trend. The American Ornithologists' Union (1983) still lists the form as a race of *R. elegans.*

Use of seasonal wetlands.—Warner and Dickerman (1959) found *tenuirostris* in many "extensive" marsh areas west of Mexico City, and I occasionally noted these rails at similar large permanent wetlands. However, I also found them in smaller seasonal wetlands in Jalisco after the onset of the summer rains, which typically begin in mid-June. In Jalisco, as throughout the range of *tenuirostris,* rainfall is the most pronounced seasonal variable. Guadalajara, located centrally in Jalisco, receives an annual average of 95 cm of precipitation, with 86% falling as rain during the June–September period (Wernstedt 1972). The effects

of such substantial precipitation are to expand the perimeters of permanent wetlands, create isolated seasonal wetlands, stimulate growth of wetland vegetation, and facilitate breeding by waterbirds. I observed *tenuirostris* in seasonal wetlands in Jalisco near El Molino (elev. 1550 m, 40 km SW Guadalajara), east of Laguna de Cajititlán (elev. 1500 m, 30 km S Guadalajara), in the vicinity of Ameca (elev. 1350 m, 75 km W Guadalajara), and near Atequiza (elev. 1500 m, 40 km SE Guadalajara). Water, vegetative cover, and rails were absent in each of these areas prior to the onset of the rains.

In the El Molino area in April through early June 1973, the valley was dry and barren and waterbirds were absent. After the rains began in mid-June, a shallow lake with an extensive marshy border of grasses, sedges, and forbs formed in the lower portion of the valley. This wetland was surrounded by wet pastures and muddy fields of corn and sorghum through which ran marshy ditches. I first noted rails there on 12 July 1973 and found them common there on 19–20 July; I last worked the valley on 1 August, at which time rails were still conspicuous. The El Molino site is about 25 km northwest of the west end of Lago de Chapala and about 15 km east of Laguna de Atotonilco.

The agricultural area east of Laguna de Cajititlán was similar to that of the El Molino valley, being dry and barren prior to the rains but wet and green in the rainy season. I recorded rails in grasses and sedges about seasonal *presas* (reservoirs) and in muddy, weedy sorghum fields on 30 July 1973, 9 and 12 August 1973, and 20 June 1974. The nearest potential rail habitat to this area is Laguna de Cajititlán, some 3–4 km distant. Near Ameca, I found a single rail in a seasonal wetland on 25 July 1973; the nearest extensive marsh habitat known to me is probably Presa de la Vega, some 30 km away.

Nest and eggs.—On the morning of 16 August 1973, I discovered an active nest in a seasonally wet pasture near Atequiza, approximately 6 km south of the Río Santiago, and near the outer edge of the river valley. I first found the nest when an adult rail flushed from it. It contained five warm eggs that were oval and whitish with brown spots. The nest was a domed structure made entirely of spikerush (*Eleocharis*), and it was situated in a seasonal stand of spikerush ranging from 45–60 cm tall. The following morning an adult flushed from the nest which still contained five eggs. I photographed the nest and eggs on 17 August, but did not return to the site again that year.

I visited the Atequiza site in May 1973, but found it devoid of water and vegetative cover. The aspect of lush greenness in August 1973 was a dramatic contrast to the pre-rainy season barrenness. I also visited this site in May 1974 and May 1977, on the latter occasion equipped with tape-recorded rail calls, but I failed to find rails or suitable rail habitat. During a brief visit on 11 August 1975, however, I found at least three adult rails occupying comparatively extensive rail habitat.

Breeding season.—Based on specimens, Warner and Dickerman (1959) judged that the nesting season for this rail began in May and continued into July. My discovery of a nest with eggs extends the season into August; presumably, flightless young would occur well into September. It seems possible that egg laying could begin earlier than May in permanent marsh habitats, resulting in a breeding season extending from at least April into September. Such a lengthy breeding season would not be surprising, given the environmental regime of the Central Highlands region and the propensity of Clapper and King rails to renest if earlier efforts are disrupted or to initiate second nests after earlier successful efforts.

Discussion.—While *tenuirostris* apparently is resident throughout the year in the central Mexican highlands, my observations suggest that it is not strictly sedentary. I surmise that it occurs in permanent wetlands during the long dry season (October–April/May), with some dispersal to seasonal wetlands during the rainy season (May/June–September). This tendency to disperse has survival value, in that individuals are not restricted entirely to permanent marshes (many of which are in sadly degraded condition) and in that it probably serves to

extend the breeding season. It seems likely that these seasonal movements explain the lack of geographic variation within this race, the range of which extends some 700 km from west to east, and about half that distance from north to south. This is in marked contrast to certain other resident birds of the Central Highlands that are similarly dependent upon limited mesic environments but that tend to be sedentary in very local areas. However, the well-being of this highland race of rail is by no means assured. The overall range is limited, and suitable habitat becomes severely restricted toward the end of the typical dry season. Furthermore, the wetlands on which these rails depend may experience increasing agricultural, industrial, and urban development.

Although specimens apparently are lacking, *tenuirostris* should be expected to occur in wetlands in the highland states of Querétaro, Hidalgo, and Morelos. In fact, there are May sight reports of *tenuirostris* in rice fields near Cuernavaca, Morelos, which may be the basis for that state being listed in the range of the King Rail by the American Ornithologists' Union (1983). The supposed occurrence of *tenuirostris* in the coastal lowlands at Mazatlán, Sinaloa, has been properly discredited by Banks (1975). While *tenuirostris* has been collected in Nayarit within 35 km of the Pacific Coast, that locality lies at an elevation of about 1000 m. Hence, there is apparently no contact with the grayish, lowland *R. l. nayaritensis,* which is resident in the coastal marshes and mangroves near San Blas.

Tenuirostris is most often referred to as the Mexican Clapper (or King) Rail, but in light of the presence of several additional races in the Mexican lowlands, this name seems inappropriate. As the distribution of *tenuirostris* corresponds quite closely to the general limits of the Central Highlands region of Mexico, and as this race occurs regularly at higher elevations than do any of the other races of Clapper or King rails, I suggest that Highland Clapper (or King) Rail may be a useful name for this distinctively marked race.

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Factors affecting the termination of breeding in Nuttall's White-crowned Sparrows.—A number of factors are known to affect the length of birds' breeding seasons, including intrinsic geographical factors, such as photoperiod and latitude (Miller 1960, MacArthur 1964, Ricklefs 1966, Wyndham 1986), and ecological factors, such as altitude and climate (Davis 1933, Skutch 1950, Immelmann 1971). Factors influencing the length of the breeding season can operate by affecting either the timing of the initiation or the termination of breeding or both. Climatic conditions are generally thought to affect the timing of the initiation of breeding by affecting the availability of food resources for the birds (Lack 1950, Skutch 1950, Snow and Snow 1964, Immelmann 1971, Wyndham 1986). However, climatic conditions may also affect the availability of nest sites or nesting material, particularly in areas with extensive winter snowfall (Morton 1978, DeSante, unpubl. data). Climatic conditions may also affect the termination of breeding through a relationship with food supply, but possibly in a more indirect or anticipatory manner. In migratory species, for example, the termination of breeding may occur well in advance of the time when food resources begin to diminish, presumably to allow the birds adequate time and an adequate food supply to raise their young to independence, complete their prebasic molt, and store fat for migration. In non-migratory birds, certain of these necessities may be somewhat relaxed, but the termination of breeding must still to some extent be controlled by the availability of food resources.

In situations where the environment provides predictive information as to the future availability of food resources (Immelmann 1973), the question arises as to what happens if the environmental cues lead to faulty predictions. If a predicted good food supply should suddenly fail, it seems obvious that the birds will either curtail breeding or fail in their breeding attempts if they persist. But what if a predicted failure of the food supply does not happen and food remains abundant? Wong (1983) presented circumstantial evidence to show that supplemental feeding with poultry mash extended the breeding season of Eurasian Tree Sparrows (*Passer montanus*) by two months at a site in Malaysia. Here we present data suggesting that a local superabundance of food will permit extended breeding by individual pairs that have access to that food resource.

Coastal central California experiences a Mediterranean climate characterized by mild wet winters and warm dry summers. Along the immediate coast, where both the Point Reyes Bird Observatory's Palomarin Field Station and Golden Gate Park are located, the summer drought is ameliorated somewhat by the occurrence of persistent fog. Nevertheless, nearly 83% of the annual precipitation falls as rain during the 5 months November to March, while only 5% falls during the 5 months May to September. Virtually all of the annual plants,