

# Notes on the breeding biology and population density of the Tucuman mountain-finch (*Poospiza baeri*; Aves: Emberizidae) in Argentina, with description of nest and eggs

Notas sobre la biología reproductiva y densidad de poblaciones de la monterita serrana (*Poospiza baeri*; Aves: Emberizidae) en Argentina, con descripción del nido y puesta

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## ABSTRACT

Line transect census work carried along ravines of the Aconquija mountain (NW Argentina) among 1989 to 1993, gave a breeding density of the Tucuman mountain-finch between 0.02-0.03 birds per km. Highest post-breeding density (0.25 birds/km) was found between 2,600-3,100 m.a.s.l. Breeding of the species occurs from December to March with observed fledglings in April. Two nest and eggs found near El Infiernillo mountain-pass (Tucuman) are described. According to measurements taken on museum specimens, mean wing length and red breast patch is statistically significant larger in males than in females.

**Key words:** Tucuman Mountain-Finch, Breeding, Population.

## RESUMEN

Censos basados en transectos y llevados a cabo entre 1989-1993, en barrancales de la Sierra del Aconquija (NO Argentina) ofrecen una densidad poblacional de 0,02-0,03 individuos de Monterita Serrana por km<sup>2</sup>. Una mayor densidad post-reproductiva de 0,25 aves/km fue encontrada entre 2.600-3.100 m.s.n.m.. La reproducción tiene lugar entre diciembre a marzo, observándose aves jóvenes en abril. Se describen dos nidos de la especie encontrados cerca del puerto de montaña del Infiernillo (Tucumán). Basados en medidas tomadas sobre especímenes de museo, la longitud media del ala y la mancha rojiza del pecho es estadísticamente significativo mayor en los individuos machos.

**Palabras clave:** Monterita Serrana, Reproducción, Poblaciones.

## INTRODUCTION

The Tucuman Mountain-finch (*Poospiza baeri*, Oustalet 1904), is considered a full species of the genus *Compsospiza* (e.g., Meyer de Schauensee 1966, Narosky & Yzurieta 1987, Navas & Bo 1991, Nores 1991), or treated as a subspecies of *Poospiza garleppi* (Bond 1951, Ridgely & Tudor 1989, Fjeldsa, 1992, Fjeldsa & Krabbe 1990). In any case, the Tucuman Mountain-finch is globally considered a vulnerable/rare threatened species and

there is an urgent need for know the distributional status and ecological requirements of the bird (Collar et. al 1992). The species is restricted to a very small area and habitat in north western Argentina and very little is known about its ecology, including estimate of total population, because of lack of studies probably due to inaccessibility of its habitat. The aim of this paper is to present new information on the biology of this rare species, obtained in the course of a more general study of the avifauna of the area.

## MATERIAL AND METHODS

Field work was carried out in the Aconquija-Calchaqui mountain area, composed of two parallel Andean ranges between 27° 20' S-65° 48' W to 26° 43' S-65° 45' W in Tucumán province (NW Argentina). The east slope of the range above 2,200 m.a.s.l. is covered by a large and relatively uniform open grassland, the dominant genus being *Festuca* and *Stipa* (Gramineae). The landscape is only broken by steep, bushy ravines and some small woodland patches of Mountain Alder (*Alnus acuminata*) and "Queñoa" trees (*Polylepis australis*). In the western part of the range, the habitat is an arid prepuna montane scrub with big cacti (*Echinopsis paroaria*) and, at a lower altitudes, "Algarrobo" trees (*Prosopis* spp.). For a more detailed description of the general area see Meyer & Weyrauch (1966), Vervoort (1982) and Peris & Alabarce (1991). Previous bird data for the region have been published by Olog (1949) and Handford (1983).

Bird censuses work was carried out in the study area in order to sample seasonal bird distribution and populations. Methodology used was line transect counts with sampling units of 20 minutes (Järvinen & Väisänen 1977, Telleria 1978), which represent about 700-1000 m covered and were made to divide small sample sections, whose habitats could be measured.

All the passerine birds observed at 25 m from the observer were counted (a main belt 50 m wide), and also those observed more than 25 from the observer as a supplementary belt. All the surveys were made by the same observer and the data have not been transformed. Since the validity of the method under Andean conditions is not known, there may be some inherent bias; for example it is more useful in determining the number of birds with small territories than those with large ones and as no data exists on species detectabilities, some precautions are needed in order to explain the densities found here. A total of 220 km (about 1,100 ha) were covered from March 1989 to February 1993. Censuses were made throughout the year except in winter (July-September). During the breeding sea-

son (December-March) and between censuses, time was spent looking for nests of sierra-finches (*Phrygilus* spp.) and during these searches we found two nests of the Tucuman Mountain-finch.

In addition to our field observations, we examined a total of 24 museum specimens (14 in the Museum Miguel Lillo of San Miguel de Tucuman and 10 at the American Museum of Natural History of New York). Based on these specimens, differences between sexes were analyzed according to wing length (flattened wing; Svensson 1992), length of bill and extension of the orange-tawny breast-band.

## RESULTS AND DISCUSSION

*Population and movements*

The species has only been observed along the humid eastern slope of the range. In the breeding season the Tucumán mountain-finch appears above 2,500 m. Breeding birds have a very low density of 0.02 individuals per square-km of prospected bushy ravine and they are more abundant up above 2,800 m (0.03 individuals per square km). In the post-breeding season (late March to April) with ravines and grassland pooled together, it was possible to detect an increase to 0.25 birds per square km between 2,600-3,100 m.a.s.l. (Peris & Alabarce 1991) due to dispersal of fledglings and adults. Near winter (May-June), several individuals were observed on river side scrub and willows (*Salix* spp.) bordering the Tafi and Blanquito rivers, at about 0.5 and 2 kms from the town of Tafi del Valle. People in this village reported the presence of this species in bushes of private gardens during July and August, and they stated that the species was more abundant during winters with heavy snowfall. According to preliminary census data (Peris, unpub.), the Tucuman Mountain-Finch has a relative abundance of only 0.1% of all the bird species present in the area (birds of prey excluded) and together with the Plain-capped Ground-tyrant (*Muscisaxicola alpina*) could be, at the present time, one of the least common passerine species in the re-

gion, although Handford (1983) reported both species as frequent. At the present time, we cannot confirm the low estimate of 180-200 total individuals given by Nores in 1985 (in Collar et al. 1992) and in fact, the species has new reports from Calilegua National Park and the "La Quesera" stream (Yala valley), both localities in Jujuy province, the Sierra del Manchao (Catamarca) and the high grasslands of the Sierra de Velasco in La Rioja province (Chebez 1994, Wege & Long 1995). All these observations are far away from the Infiernillo report and could indicate a larger breeding range for the species than the reported elsewhere. A last survey conducted in appropriate habitat in Cachi and Cachiadentro as well as in the "Valle Encantado" (Salta province) during the 1995 breeding season ended unsuccessful to find the bird.

Possible threats to the species could come from new agricultural practices in part of its original habitat. During colonial times, the Tafí slope supported overgrazing and fire in order to create new pastures, but recent dramatic changes have occurred in the area with the introduction of new crops such as Seed-potatoes (*Solanum tuberosum*) since 1986 and strawberries (*Fragaria vesca*) since 1989. Also the percentage of cultivated land has increased and currently covers about 20% of the region. This newly converted agricultural land is sprayed with pesticides during the breeding season and we have observed heavy mortality in some bird species such as burrowing owls (*Athene cunicularia*), between 1-3 days after spraying. If these agricultural practices are improved, they could be a serious threat in a range that is considered a hotspot for threatened birds in the neotropics (Wege & Long 1995).

### Breeding

The presence of slightly enlarged gonads in December are mentioned by Fjeldsa & Krabbe (1990). This is confirmed by 3 males deposited in the M. M. L., whose testes begin to enlarge between December to January in the Sierra de Ambatá, another mountain range, located about 100 km south of our study area. This is a month

earlier than the reported main breeding season of January-March (Collar et al. 1992). In our study area, one fledgling with a pale red breast patch, was seen in early April.

Until now the species' nest and eggs were unknown, however I discovered two nests.

The first nest was found on the 22nd January 1993, had three warm eggs and it was protected by a thick *Stipa* spp. grass in a gully at 2.500 m.a.s.l., near the road in the "Infiernillo" mountain pass. The eggs were clear white and sparsely spotted and speckled with darker purplish-brown and olive-brown. These markings were concentrated at or around the larger end. The shape was typical of emberizine birds. Egg measurements were 20.7 x 15.6 mm., 20.9 x 15.7 mm and 21.1 x 15.8 mm. The eggs were not put in water in order to test how many days they had been incubated. Five days later, the eggs were all completely destroyed. Probably unusual cold weather at this time of the season, with snow and heavy rain, could be responsible for the loss, although we cannot discard predation.

The second nest was found on 4 February 1993 near "Muñoz" peak (26° 41'S-65° 45'W, 3150 masl). It was situated on the ground and protected in dense grasslands of *Stipa* and *Festuca*. The nest site was 500 m from a scattered *Polylepis australis* woodland. The nest contained one nestling only a few hours old and one very pale blue (practically white) and finely spotted egg; markings were similar to those found in the first nest. No measurements were taken and it is impossible to know if this egg was that of the Shiny Cowbird (*Molothrus bonariensis*), but this species uses to breed lower in altitude (2.500 m; own data). One adult of the Mountain-Finch was seen emitting alarm calls at less than 6 m from this nest. On 13 February, two adult birds were seen with grasshoppers (Acrididae) near the place where the nest was supposed to be, but unfortunately, wind and/or rain had removed the signal stick and it was impossible to find the nest again. Probably the youngs could have left the nest, as has been observed in some other finches of the area (e.g., band-tailed Sierra-finch *Prygillus alaudinus*).

*Measurements of museum specimens*

A sample of adult males ( $n = 12$ ) have a mean wing length larger than the adult females ( $n = 9$ ) ( $80.1 \pm 2.2$  mm (s. e.) in males and  $78.2 + 1.1$  in females), and this difference is statistically significant ( $t$ -test = 2.279,  $p < 0.05$ ); no statistically significant differences were found in the tarsus length (mean =  $13.3 \pm 0.4$  in both sexes). The red breast patch in males (29.7 mm) is also significantly wider ( $t$ -test = 2.12,  $p < 0.05$ ) than that of females (27.1 mm). This last feature could be a useful sexual identification tool for researchers and bird banders.

## ACKNOWLEDGMENTS

I would like to thank T. Narosky, D. R. Phillips, Lloyd Kiff and D. C. Wege for information on the species. Mrs. E. Alabarce (M. M. L.) and Mary Lecroy (A. M. N. H.) who allowed me to study the bird collection of their respective museums and S. Mosa for field accompaniment in Salta province. J. Fjeldsa, M. Robbins, P. T. Handford and three anonymous referees suggested modifications in a previous draft. Partial financial support for the field work was from the Spanish MEC (Programa 2 and Programa de Movilidad de Profesorado), as well as from the University of Salamanca. Field work would have been impossible without the hospitality of the Chenaut-Soaje family.

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