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Geographic Distribution of the Andean Lizard *Liolaemus fitzgeraldi* (Squamata, Liolaemidae)

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Liolaemus fitzgeraldi Boulenger, 1899, is a small viviparous lizard (60–70 mm snout-vent length [SVL]) that inhabits only high rocky valleys (over 2700 m) of the central Andes of Argentina and Chile. All known populations are restricted to a small geographic area (Figure 1) but data are very scarce in nearby regions because access is very difficult, especially on the eastern side (Mendoza and San Juan provinces, Argentina). In the central Andes of Argentina it is the lizard with highest altitudinal distribution, reaching 4500 m in some areas. Recently some data have been published about the species (Acosta et al., 2000; Avila and Soto, 1997), but the general geographic distribution is still poorly known. Here, I present information about geographic distribution, habitat and activity of *Liolaemus fitzgeraldi*.

Distribution

Liolaemus fitzgeraldi was described from Puente del Inca (Mendoza) by Boulenger (1899). Only a few localities have been published and specimens are scarce in herpetological collections. Cei (1986) mentioned several localities near the type locality: Laguna Los Horcones, Las Cuevas (in Mendoza province), and Cerro Mercedario (in San Juan Province). Avila et al. (1998) extends the known range to the valleys of the El Pachón, Mondaca and Santa Cruz rivers, near the El Pachón copper mine. Additional material was collected in the summer of 1998–1999 in the valley of the Río Castaño (Calingasta Department, San Juan Province), extending the known range 120 km to the north (Acosta et al., 2000). On the western slopes of the Andes, in Chile, several authors have cited *L. fitzgeraldi* for Laguna del Inca and Portillo, near the type locality, or "the Andean zone near Argentina–Chile border" (Donoso-Barros, 1966, 1970; Veloso and Navarro, 1988; Nuñez, 1992; Nuñez and Jaksic, 1992). Avila and Soto (1997) record the species for a region near El Pachón but on the Chilean slopes of Andes (Las Gualtatas, Mina Los Pelambres). In Figure 1, I present all known localities for this species and a probable geographic distribution based on habitat suitability. Several field trips north to the basin of the Río Castaño failed to locate this species, and probably this is the northern limit for *L. fitzgeraldi* at least on the eastern slope. In the south, distributional limits probably are the type locality and adjacent areas in the same valley (Río Mendoza). All present information shows a very small geographic distribution for this species apparently restricted to high valleys of the Mendoza, Los Patos, and Castaño river basins in Argentina and adjacent small sectors in Chile, altogether an area of less than 15000 km^2.

Habitat

Liolaemus fitzgeraldi inhabits the ecoregion known as the Southern Andean Steppe. This formation is characterized by areas with extremely abrupt relief with permanent snow, ice caps and glaciers in the highest peaks; suitable habitats with vegetation are found only in the bottoms of valleys and canyons or on some slopes. Soils are rocky, stony or sandy, and loose screes are frequent. In terms of phytogeographical classification (Cabrera, 1976; Cabrera and Willink, 1980), the ecoregion is part of the Altoandina phytogeographical province, which is related floristically to the closely connected Puneña and Patagónica provinces (Cabrera, 1978). Vegetation is very reduced in these areas. At intermediate elevations (2700–3300 m), low shrubs and cushion plants of *Oxalis, Junellia, Adesmia, Laretia* and *Azorella* are frequent; this belt has been described as a "región de la llareta," the common name given to dense woody cushions (Roig, 1972). On the highest parts of the mountains (3300–4500 m), specially adapted perennial forbs of genera such as *Senecio, Nassauvia, Chaetanthera, Draba, Barneoudia, Leucheria*, and *Moschopsis* withstand the extreme wind and cold of the denuded rocky terrain, or the moving scree slopes.

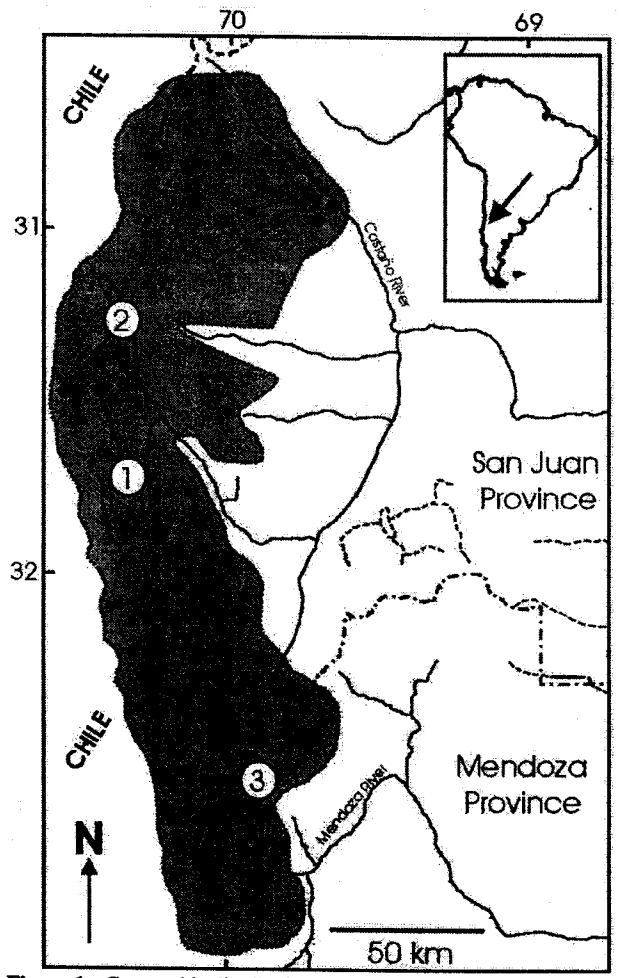

Figure 1. Geographic distribution of *Liolaemus fitzgeraldi* Boulenger, 1899. Black dots: known localities mentioned in bibliography or visited in this study; (1) Mina El Pachón, (2) Mina Los Pelambres, (3) Puente del Inca and Laguna Horcones. Gray area: probable geographic distribution inferred from suitable habitats. Inset: South America, black arrow marks the region of study.

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In areas with wet soils and near streams, Cyperaceae and Juncaceae dominate, with some genera forming dense and hard wind-pollinated cushions such as *Oxychloe* and *Patosia* together with beautiful large-flowered forbs such as *Mimulus*, *Euphrasia* and *Senecio* species. Lizards were observed (90%) in close relationships to vegetated areas close to small creeks; only a few were found in bare areas with a soil covered by beds of gravel or small rocks. Apparently, *L. fitzgeraldi* is the only lizard in these areas. No other lizards were observed in sympatry, but at the lower altitudes of distribution along the Río El Pachón, several old eggs from a *Homonota* (Gekkonidae) were found under a rock.

Activity

Field work was carried out in an Andean valley near the site Mina El Pachón, department Calingasta, San Juan province, western Argentina, in late November 1996, during the austral summer season. Climate of this area is dry, and very cold, with mean annual temperature of 3.2°C (average maximum, 19°C—average minimum -25°C). Snowstorms and hailstorms can fall any time, and frosts are frequent year-round. Precipitation results from winds off the Pacific, and falls mostly in winter. Additional observations were made in a high Andean canyon (locally called Las Gualtatas), near the site of Mina Los Pelambres, 55 km west Illapel, IV Región Coquimbo, central Chile, in January 1997. This site is separated by 8 km (airline) from the Mina El Pachón site, but is on the opposite (western) slope of the Andes. The elevation at both sites varies between 3100 and 3500 m. Observations of a few individuals were carried out in Puente del Inca and Laguna Horcones, Department Las Heras, Mendoza province, Argentina.

I made observations in the field from 0830 to 1900 h in Mina El Pachón and only for a short time at the other three sites. In Mina El Pachón, lizards were observed, and some individuals collected in the course of three days of fieldwork.

When a lizard was sighted, the hour of activity was recorded and, after a few minutes of observing its behavior, an attempt was made to capture it by hand. At the Mina El Pachón site, a total of 71 individuals was observed in three days. *Liolaemus fitzgeraldi* was active between 0900 and 1900 h and had a unimodal activity pattern, with a peak between 1000 to 1400 h. This activity pattern (including peak and extension) resembles that of other species observed in nearby cold areas of the Andes (*L. vallecurensis*, *L. ruibali*, *L. elongatus*, *L. eleodori*; Avila, unpublished), and varies according to weather conditions and season. When clouds interrupt the sunlight or strong cold winds descend from the peaks for short periods, lizards usually take cover after a few minutes under rocks or in crevices; activity ceases, starting again when the sun reheats the surface of the rocks. A cold wind (10–30 km/h) was almost always recorded in all areas during lizard activity but rock and soil temperatures are high (>25°C, reaching 47°C) allowing lizard activity. Lizards were usually observed basking on small stones along small creeks with vegetation areas on the edges or areas called "vertientes" and "vegas." Only a few lizards were observed on small outcrops in bare rocky areas far from wet or vegetated areas. Lizards usually retreated to refuges when they sighted the approach of the observer to within 5 m. In seven days of fieldwork no interactions were recorded among the lizards; only basking and foraging behaviors were observed. At the Las Gualtatas site activity began after 1200 h because sunlight reached the observation site only after this hour; lizards basked on small stones along a dirt road but the number of lizards observed was low (seven individuals). Altough several lizards were sighted, only two individuals were observed for any length of time; they were basking on rocks, and their behaviors were similar to the lizards from Mina El Pachón. At both sites *L. fitzgeraldi* is present at very low density.

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