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Past and present taxonomy of the *Liolaemus lineomaculatus* section (Liolaemidae): is the morphological arrangement hypothesis valid?

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Twenty-one species of lizards are included in the southernmost clade of South America, the *Liolaemus lineomaculatus* section. There are two hypotheses of species-grouping within this section, one based on morphological similarities and the other based on molecular phylogenetic relationships; although discordant, both are in use. The ‘morphological arrangement hypothesis’, which sorts the species of the section in three groups, was proposed ~30 years ago; however, despite taxonomic changes and almost doubling the species diversity of this section since then, the hypothesis has never been tested. Here, we (1) present an updated chronological review of taxonomic changes, species descriptions, morphological groups, and genetic clades proposed for the *L. lineomaculatus* section, and (2) evaluate the accuracy of the ‘morphological arrangement hypothesis’. We show that the traditional practice of classifying 11 of these species in two of the three traditional morphological groups of the section (*Liolaemus kingii* and *Liolaemus archeforus*), which is not supported by molecular data, is also not supported by morphological data, and therefore should be abandoned; we suggest referring to this group of species as the *L. kingii* group. We characterized the *Liolaemus magellanicus* group based on morphology, and extend the previously published morphological characteristics of the *L. lineomaculatus* group. Finally, we comment on future prospects for studies of sexual dimorphism and its possible ecological implications. This paper provides a critical synthesis of our understanding of the morphological and phylogenetic patterns within the *L. lineomaculatus* section and presents a useful framework for future tests of taxonomic hypotheses and physiological, behavioural, and evolutionary questions within this section.

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ADDITIONAL KEYWORDS: *Liolaemus archeforus* group – *Liolaemus kingii* group – *Liolaemus lineomaculatus* group – *Liolaemus magellanicus* group – lizards – morphology – Patagonia – review – sexual dimorphism.

INTRODUCTION

Lizards in general are considered model systems for the study of phylogeography and speciation processes (Camargo, Sinervo & Sites, 2010), and in particular, the genus *Liolaemus* is emerging as a model system itself. *Liolaemus* has been considered an interesting genus for studies of conservation (Corbalán *et al.*, 2011), physiology (e.g. Labra, 1998, 2012; Labra & Leonard, 1999; Labra, Pienaar & Hansen, 2009; Ibargüengoytía *et al.*, 2010; Cruz *et al.*, 2011), behavioural ecology (e.g. Halloy & Laurent, 1988; Labra & Leonard, 1999; Kacoliris, Williams & Molinari, 2010; Kacoliris *et al.*, 2011), comparative anatomy (e.g. Pincheira-Donoso, Tregenza & Hodgson, 2007; Tulli *et al.*, 2007; Tulli, Abdala & Cruz, 2011), and herbivory (e.g. Espinoza, Wiens & Tracy, 2004). *Liolaemus*, one of the world’s most ecologically diverse and speciose genera of lizards (Lobo, Espinoza & Quin-

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*Corresponding author. E-mail: mfbreitman@live.com teros, 2010; Breitman *et al*., 2011a), is distributed from Peru to Tierra del Fuego (14.5°–52.5°S) and ranges in altitude from sea level to almost 5000 m, thereby inhabiting many climatic regimes (Etheridge & Espinoza, 2000). The great diversity of biological traits observed in these lizards may be related to the many different habitats that *Liolaemus* occupy, their reproductive mode (oviparous or ovoviviparous), and diet variation (insectivorous, herbivorous, or omnivorous) (Cei, 1986). Moreover, colour patterns are highly variable and colours such as blue, green, red, orange, and yellow are found in multiple species; this colour variability, combined with variation in other characters (e.g. body size), makes this genus attractive for morphological studies (e.g. Abdala, 2007). Sexual dimorphism is present in several species in a variety of traits, including body size, shape, size of the home range, and/or coloration (Valdecantos & Lobo, 2007; Vanhooydonck *et al*., 2010; Medina, Avila & Morando, 2013); although this trait has been reported in *Liolaemus* (Verrastro, 2004; Villavicencio *et al*., 2003; Vidal *et al*., 2005; Cánovas *et al*., 2006), it has not been deeply studied yet. The variation in biological attributes present in these lizards has led to many taxonomic rearrangements since *Liolaemus* was originally described by Wiegmann (1834; see Lobo *et al*., 2010 for a recent general overview).

In the last decade, studies of *Liolaemus* have increased dramatically, and the rate of species descriptions has grown exponentially (Avila *et al*., 2010; Lobo *et al*., 2010; Martínez, 2012). To date, the number of *Liolaemus* species exceeds 235 and several new species are described every year. The genus was included in the group Liolaemini under the free rank taxonomy (*sensu* Schulte, Valladares & Larson, 2003), and also included in the family Liolaemidae (*sensu* Frost *et al*., 2001; reinforced in Townsend *et al*., 2011) using the traditional rank-based classification. There is no consensus amongst researchers about which classification scheme should be the standard, and both remain in use (Knapp & Gomez-Zlatar, 2006; Lobo *et al*., 2010); in the present paper we have followed the free rank taxonomy proposed by Schulte *et al*. (2000, 2003). Two main clades of *Liolaemus* are recognized based on molecular and morphological evidence: *Liolaemus sensu stricto* or the Chilean group, and *Eulaemus* or the Argentinean group (Laurent, 1983; Schulte *et al*., 2000). Genetic analyses suggest that these groups diverged ~19 Mya [95% Highest Posterior Density (HPD) = 13.5–23.82] after the onset of the Andean orogenies (Breitman *et al*., 2011a). Within *Eulaemus*, the well-supported *Liolaemus lineomaculatus* section (Schulte *et al*., 2000) includes 21 species (Breitman *et al*., 2011a, b, c) and its divergence from the *Liolaemus montanus* section (its sister clade) has been inferred to be ~14.5 Mya (Breitman *et al*., 2011a; 95% HPD = 10.25–18.64).

The *L. lineomaculatus* section (Schulte *et al*., 2000) is distributed throughout Patagonia and ranges from central Neuquén province south to Tierra del Fuego island, and includes the southernmost distributed species of the genus (Donoso-Barros & Codoceo, 1962; Donoso-Barros, 1966; Bottari, 1975; Cei, 1986). As a result, lizards from this section inhabit extremely heterogeneous landscapes that have been directly affected by several glacial cycles since the Miocene (see Breitman *et al*., 2011a). Several refugia and phylogeographical breaks in Patagonia are hypothesized for this group of lizards, and interestingly several of these breaks are shared with other species of plants and rodents (Breitman *et al*., 2012). Lizards of the *L. lineomaculatus* section, including both omnivorous and herbivorous species of small body size, are able to survive extreme thermal environments, an ability that has captured the attention of physiologists and behavioural scientists (Jacksic & Schwenk, 1983; Ibargüengoytía, Halloy & Crocco, 2002; Espinoza *et al*., 2004; Pincheira-Donoso, Hodgson & Tregenza, 2008; Ibargüengoytía *et al*., 2010; Medina & Ibargüengoytía, 2010; Bonino *et al*., 2011; Fernández *et al*., 2011).

A recent molecular phylogeny of the *L. lineomaculatus* section (Breitman *et al*., 2011a), based on nine genetic markers (nuclear and mitochondrial) and two phylogenetic approaches (species tree and concatenation based on Bayesian, likelihood, and parsimony methods), identified four main lineages: (1) the *L. lineomaculatus* group, including *Liolaemus avilae*, *Liolaemus hatcheri*, *Liolaemus kolengh*, *L. lineomaculatus*, *Liolaemus morandae*, and *Liolaemus silvanae*; (2) the *Liolaemus magellanicus* group, including *Liolaemus caparensis* and *L. magellanicus*; (3) the *Liolaemus somuncurae* group, including *L. somuncurae* and *Liolaemus uptoni*; and (4) the *Liolaemus kingii* + *archeforus* group, including *L. archeforus*, *Liolaemus chacabucoense*, *Liolaemus baguali*, *Liolaemus escarchadosi*, *Liolaemus gallardoi*, *L. kingii*, *Liolaemus sarmientoi*, *Liolaemus scolaroi*, *Liolaemus tari*, *Liolaemus tristis*, and *Liolaemus zullyae*.

Traditionally, species of the *L. lineomaculatus* section have been morphologically classified in three groups: (1) *L. lineomaculatus* group (Etheridge, 1995), including the same species listed above; (2) *L. kingii* group (Cei & Scolaro, 1982a), including *L. baguali*, *L. kingii*, *L. somuncurae*, *L. tristis*, and *L. uptoni*; and (3) *L. archeforus* group (Cei & Scolaro, 1982a), including *L. archeforus*, *L. chacabucoense*, *L. escarchadosi*, *L. gallardoi*, *L. sarmientoi*, *L. scolaroi*, *L. tari*, and *L. zullyae*. However, the species *L. magellanicus* could not be unambiguously assigned to any of these groups. These species groups were originally recognized on the basis of scale counts and disjunct geographical distributions (Cei & Scolaro, 1982a), and later work extended distinguishing characteristics amongst species groups to include variation in scale shape, colour patterns, and size-based characters (Scolaro & Cei, 1997). It has been 30 years since this hypothesis was proposed and, although the number of species belonging to the section has almost doubled since then, this 'morphological arrangement hypothesis' (our terminology) has never been revised or tested, thus the importance of testing the validity of this currently accepted hypothesis within the larger context of *Liolaemus* systematics (Lobo *et al*., 2010; Breitman *et al*., 2011a).

Our broader goal is to evaluate the accuracy of the current 'morphological arrangement hypothesis' of this section, and hence to recommend whether this classification should be followed by future researchers. To accomplish this goal, we (1) performed an updated chronological review of the taxonomic changes, species descriptions, morphological groups, and genetic clades proposed for the *L. lineomaculatus* section, summarizing characters that have been proposed to diagnose the morphological groups (key characters); (2) evaluated the accuracy of key characters for discrimination amongst morphological groups using analyses of our measurements of lizards collected in type localities (and surrounding areas); and (3) incorporated more characters (broadly used for characterization of species in *Liolaemus*, and in this section) to test if discrimination amongst morphological groups is possible based on a larger number of characters. We used a novel morphological data set generated from 345 lizards representing all the species of the section, collected from (or nearby) their type localities. In total, we qualitatively and quantitatively analysed 35 morphological variables (including meristic, morphometric, squamation, and coloration patterns) using univariate and multivariate statistical techniques, and we discuss our results and their taxonomic implications. We also briefly discuss novel patterns of sexual dimorphism discovered in some groups. We show how extensive morphological analysis improves our understanding of the species of the *L. lineomaculatus* section, and how our findings and recommendations should aid future alpha taxonomic work, and should be of particular use to researchers interested in testing physiological, behavioural, or evolutionary hypotheses within the *L. lineomaculatus* section.

MATERIAL AND METHODS

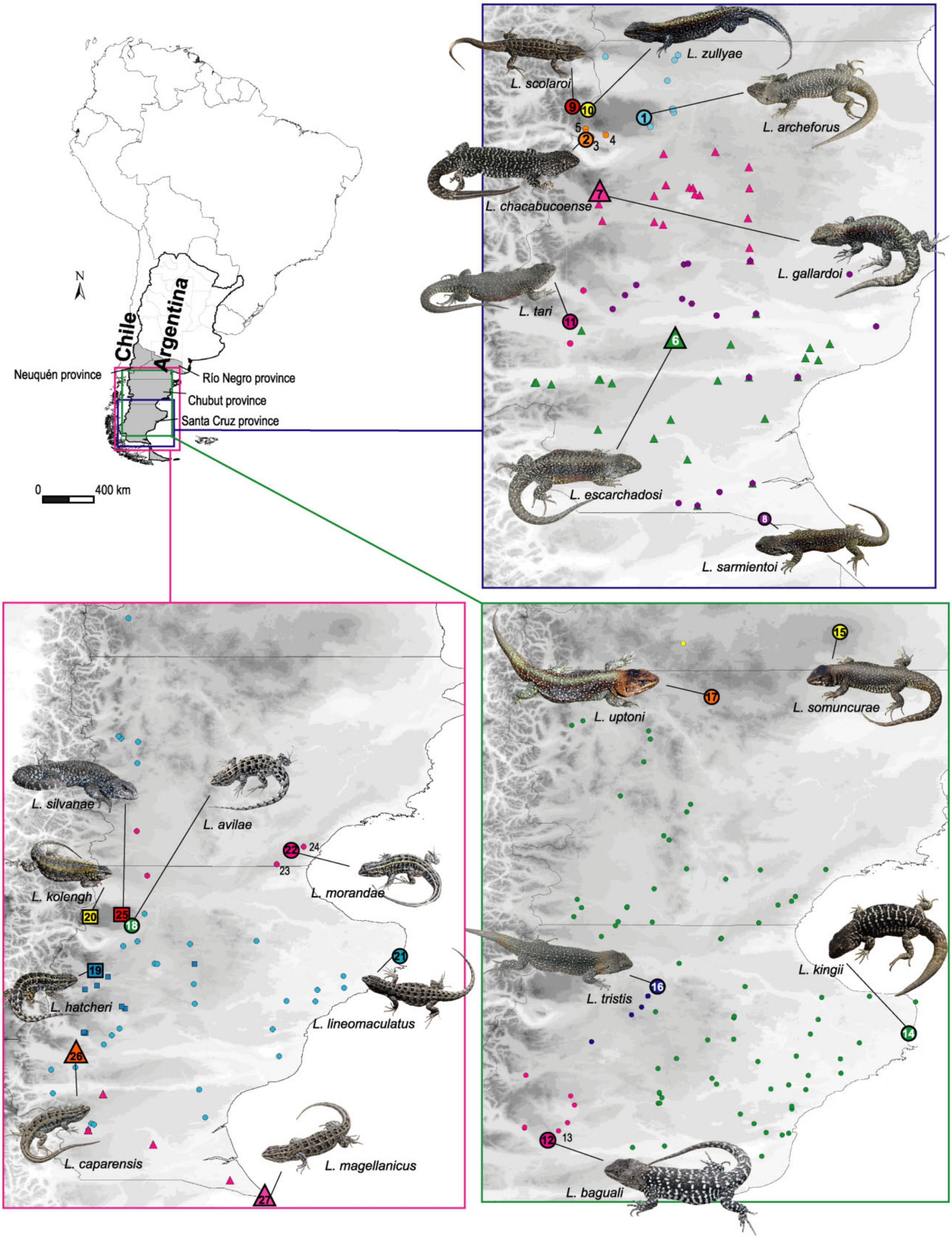
HISTORICAL REVIEW

We conducted a bibliographical search and collated a total of 46 publications that met the goals of this review. This literature database included all publications in which species of the *L. lineomaculatus* section were described or where morphological or molecular arrangements were proposed or mentioned. Additionally, other papers where more than four species of the group were studied systematically were also selected. We carefully read each paper and extracted information concerning species descriptions, morphological differences amongst described species, diagnostic characters used to define each of the three traditional morphological groups (*L. lineomaculatus*, *L. kingii*, and *L. archeforus*), phylogenetic relationships amongst species of the section, and the phylogenetic method used to perform the reconstruction. We summarized this information chronologically, and tabulated morphological and distributional characteristics of these three groups that are in current use. *Liolaemus magellanicus* and *L. caparensis* are not formally included in any of the three traditional morphology-defined groups, but have been recovered as a distinct genetic lineage (Breitman *et al*., 2011a) within the *L. lineomaculatus* section. As a result, we followed Breitman *et al*. 's (2011a) recommendations and considered both species part of the *L. magellanicus* group. Thus, the validity of the *L. archeforus*, *L. kingii*, *L. lineomaculatus*, and *L. magellanicus* groups was morphologically evaluated throughout the present study.

MATERIAL EXAMINED

A total of 345 lizards, representing all the species included in the *L. lineomaculatus* section, was collected from type localities (or within 50 km when sample size was extremely low): *L. archeforus* ($N = 12$), *L. avilae* ($N = 9$), *L. baguali* ($N = 21$), *L. caparensis* ($N = 10$), *L. chacabucoense* ($N = 21$), *L. escarchadosi* ($N = 13$), *L. gallardoi* ($N = 41$), *L. hatcheri* ($N = 20$), *L. kingii* ($N = 29$), *L. kolengh* ($N = 31$), *L. lineomaculatus* ($N = 11$), *L. magellanicus* ($N = 10$), *L. morandae* ($N = 7$), *L. sarmientoi* ($N = 11$), *L. scolaroi* ($N = 6$), *L. silvanae* ($N = 17$), *L. somuncurae* ($N = 16$), *L. tari* ($N = 12$), *L. tristis* ($N = 29$), *L. uptoni* ($N = 11$) and *L. zullyae* ($N = 8$) (Fig. 1, Appendix 1). About 35% of the individuals used in the present

Figure 1. Map of southern Patagonia showing distribution sites for species (each one with a different combination of colour and symbol) formerly included in the *Liolaemus archeforus* (blue), *Liolaemus kingii* (green), *Liolaemus lineomaculatus*, and *Liolaemus magellanicus* (pink) groups. Numbers represent localities used in this study; type localities are shown in bold (black or white). Picture-size differences represent differences in body size amongst species.


N
Chile
Argentina
Neuquén province
Río Negro province
Chubut province
Santa Cruz province
0
400 km
L. scolaroi
L. zullyae
9
10
1
L. archeforus
5
2
3
4
L. chacabucoense
7
L. gallardoi
L. tari
11
6
L. escarchadosi
8
L. sarmientoi
L. silvanae
L. avilae
22
24
23
L. morandae
L. kolengh
20
25
18
19
L. hatcheri
21
L. lineomaculatus
26
L. caparensis
L. magellanicus
27
15
17
L. uptoni
L. somuncurae
L. kingii
L. tristis
16
14
12
13
L. baguali

study were employed in our previous studies to infer phylogenetic and phylogeographical relationships, to describe new species, and to propose genetic breaks and refugia in southern Patagonia (Breitman *et al.*, 2011a, b, c, 2012). All specimens are deposited in the herpetological collections of La Plata Museum (MLP.S) and Centro Nacional Patagónico in Puerto Madryn (LJAMM-CNP), Argentina.

Characters studied

From fixed specimens, we evaluated variation at 14 morphometric and ten meristic (scale count) characters, as well as ten qualitative characters representing squamation and patterns of body coloration (e.g. Vega, Bellagamba & Lobo, 2008; Table 1). The 34 characters that we examined included all those that have been used in previous literature to describe and/or compare species of the *L. lineomaculatus* section, as well as several additional characters that have been shown to be informative in other groups of *Liolaemus* (e.g. Abdala, 2007). Measurements were taken to the nearest 0.1 mm from adult specimens using a Schwyz electronic digital calliper. Scale counts were carried out on juveniles and adults with a stereoscopic microscope, and qualitative characters were observed and recorded only from adults. Scale terminology, measurements, and chromatic states followed Smith (1946). Measurements and scale counts were principally carried out on the right side of each specimen, but when this was impossible (e.g. lack of a leg) they were taken on the left side. Coloration in life was observed from digital photographs taken at the time of capture. Sex was determined by the thickness of the base of the tail and the presence of precloacal pores (where present) and adults were identified by size and coloration patterns (Cei, 1986).

Morphometric characters used in this study were: (1) SVL, snout–vent length, measured from the tip of the snout to the posterior margin of the precloacal scales; (2) TL, tail length, from the cloaca to the tip of the tail, measured only on individuals with intact tails; (3) DFH, distance between fore and hind limbs, taken from the armpit of the front leg to the anterior insertion of the hind limb; (4) FOL, foot length, measured ventrally along the fourth toe, from the base of the heel to the base of the claw; (5) TFL, tibia–fibula length, the distance from the knee to the ankle; (6) RUL, radius–ulna length, measured from the elbow to the wrist; (7) HAL, hand length, the ventral length

Table 1. Sample sizes of individuals used in morphometric and meristic analyses; sample sizes of individuals with intact tails are also provided. Values are given for females (F), males (M), and total sample

	Morphometric			Meristic			Intact tail		
Species	F	M	Total	F	M	Total	F	M	Total
Liolaemus archeforus	3	8	11	4	8	12	1	2	3
Liolaemus avilae	4	5	9	4	5	9	4	5	9
Liolaemus baguali	6	6	12	13	8	21	3	4	7
Liolaemus caparensis	5	3	8	7	3	10	4	3	7
Liolaemus chacabucoense	6	9	15	9	12	21	4	6	10
Liolaemus escarchadosi	4	5	9	5	8	13	2	3	5
Liolaemus gallardoi	15	17	32	23	18	41	14	14	28
Liolaemus hatcheri	6	12	18	8	12	20	3	6	9
Liolaemus kingii	10	14	24	14	15	29	6	10	16
Liolaemus kolengh	12	15	27	16	15	31	9	12	21
Liolaemus lineomaculatus	4	6	10	5	6	11	4	4	8
Liolaemus magellanicus	4	6	10	4	6	10	4	4	8
Liolaemus morandae	4	2	6	5	2	7	2	1	3
Liolaemus sarmientoi	4	7	11	4	7	11	4	6	10
Liolaemus scolaroi	1	4	5	1	5	6	1	4	5
Liolaemus silvanae	8	9	17	8	9	17	5	3	8
Liolaemus somuncurae	6	10	16	6	10	16	3	6	9
Liolaemus tari	5	5	10	7	5	12	4	4	8
Liolaemus tristis	9	11	20	17	12	29	6	9	15
Liolaemus uptoni	4	6	10	5	6	11	4	5	9
Liolaemus zullyae	1	7	8	1	7	8	1	6	7
Total	121	167	288	167	179	345	88	117	205

of the third finger from the base of the wrist to the base of the claw; (8) HH, head height, the distance of the head measured perpendicularly to the auditory meatus; (9) HW, head width, taken between corners of the mouth; (10) HL, head length, length taken from the anterior edge of the auricular opening to the rostral scale; (11) RND, rostral–nasal distance, measured between rostral and nasal scales; (12) RH, rostral height, the longest vertical measure of the rostral scale; (13) DRE, rostral–eye distance, measured from the rostral scale to the anterior edge of the eye; and (14) AH, auditory meatus height, the longest vertical diameter of the auditory meatus.

Meristic characters used in this study were: (1) SCI, number of scales in contact with the interparietal; (2) LS, lorilabial scales, number of scales above the supralabial scales; (3) SS, supralabial scales, number of scales on the upper edge of the mouth, from the rostral scale (but without including it) to the corner of the mouth; (4) IS, infralabial scales, number of scales on the lower edge of the mouth, from the mental scale (but without including it) to the corner of the mouth; (5) MS, midbody scales, number of scales around the body at the trunk; (6) DS, dorsal scales, number of scales from the first nuchal scale to the line of scales between the hind limbs; (7) VS, ventral scales, number of scales counted after the mental scale (without including it) to the precloacal scales; (8) IL3, number of infradigital lamellae of the third finger; (9) IL4, number of infradigital lamellae of the fourth toe; and (10) PP, number of precloacal pores.

The qualitative characters used in this study were taken from fixed specimens and from digital photographs of specimens taken at the time of capture. Variables taken from fixed specimens were: (1) dorsal stripe pattern, referring to the shape and size of white or yellow dorsal bands (perpendicular to the body axis); four categories were recorded (1a) complete or slightly broken bands, (1b) dotted bands, (1c) irregular bands, (1d) indistinct or almost indistinct bands; all these variables were illustrated and respectively described as 0–20, 40, 60, and 80–100 in Scolaro (1987); (2) presence/absence of vertebral line; (3) presence/absence of paravertebral line; (4) presence/absence of dorsolateral line, between the insertions of fore and hind limbs; (5) presence/absence of any degree of variegation on the belly, measured from the mental scale to the tip of the tail; (6) ventral melanism from the mental scale to the cloacal region; five categories were recorded (m0) no melanism, (m1) melanism only present on the gular zone, (m2) melanism only present on the belly, (m3) melanism present on all body regions except the cloacal region and limbs, (m4) melanism present on all body except the limbs, (m5) melanism present on all the body. Variables taken from pictures were: (1) presence of red or orange scales on any part of the body; (2) colour of dorsal background; (3) colours present on dorsal side; and (4) colours present on ventral side.

STATISTICAL ANALYSIS

Evaluating the 'morphological arrangement hypothesis' amongst groups

To test the 'morphological arrangement hypothesis' amongst groups, we qualitatively and quantitatively evaluated whether morphological characters listed as diagnostic amongst groups in the literature validly discriminated the 21 described species in the *L. kingii*, *L. archeforus*, *L. lineomaculatus*, and *L. magellanicus* groups. Shape and disposition of dorsal scales were qualitatively compared amongst species groups by comparing variation captured in digital photos; dorsal background colour, presence of red/orange scales, and belly colour were scored and compared amongst species of each group. Dorsal pattern (including dorsal stripe pattern and vertebral, paravertebral, and dorsolateral line pattern), variegation and melanism were converted to percentages reflecting their prevalence amongst members of each species and group before being qualitatively compared. Midbody scales, snout–vent length, forelimb length (calculated as radius–ulna length + hand length), and number of precloacal pores were statistically compared through univariate tests (see 'Morphological comparisons amongst species within groups' below). Although the species and groups considered in this study have mainly been distinguished based on morphological characteristics, geographical distributions have also prominently figured in the current taxonomic arrangement within the *L. lineomaculatus* section. Therefore, we also tested the hypothesis that the (morphologically distinct) species and groups in the section correspond to distinct geographical groupings, by comparing distributional maps that we constructed for each species using the geographical coordinates from our collections.

We tested whether there were generalized morphological differences (extending those proposed in the literature) amongst the four morphological groups using discriminant function analyses (DFAs) performed on 13 meristic and nine morphometric variables (tail length and precloacal pores were excluded from the analysis because several individuals had no intact tail and precloacal pores were present only on males of some species) (Shepard, Irwin & Burbrink, 2011). DFAs are linear combinations of the original variables that maximize differences between given groups (e.g. Crochet, Geniez & Ineich, 2003). For our purposes, if DFA differences between groups were not clear (> 50% group overlap in morphospace plus a large classification error) then we interpreted this as indicative of no evidence for considering those groups valid. DFA provided a graphical visualization of group differences and yielded axes standardized by the common variance. Three DFAs were performed, one on the meristic data set, another on the morphometric data set, and a third one on the morphometric data set standardized by the SVL (through division; Das & Grismer, 2003; Vukov *et al*., 2006; Shepard *et al*., 2011). Prior to the DFA, a multivariate analysis of variance (MANOVA) was used to test whether there were differences between sexes within each morphological group (in both meristic and morphometric data sets). In cases in which sexual differences were present, groups were divided by sex (Vukov *et al*., 2006; Medina *et al*., 2013). The general trends in sexual dimorphism recovered from DFA graphics are discussed in a comparative and evolutionary framework in order to provide a starting point for future research.

Morphological comparisons amongst species within groups

Based on the results of the previous section, species were placed in three morphological groups: *L. lineomaculatus*, *L. magellanicus* and *L. kingii-archeforus*. We did not find evidence for differentiation between the *L. kingii* and *L. archeforus* groups, but all these species were recovered in one group morphologically differentiated from the *L. lineomaculatus* and *L. magellanicus* groups. Thus, throughout the Material and methods and Results sections of this paper, we refer to these 11 species as the *L. kingii-archeforus* group to discriminate this grouping from the traditional five-species *L. kingii* group. In the Discussion section, based on the results presented here, we call these 11 species 'the *L. kingii* group', as *L. kingii* was the first described species of this group. In order to provide an updated analysis of the morphological differences between genders of each species and amongst species of each group, univariate tests were performed as described in the next paragraph on the morphometric and meristic data sets.

One-way analysis of variance (ANOVA) was implemented to evaluate the significance of differences in variable means amongst species, Di Rienzo, Guzmán, and Casanoves test (DGC) comparisons (Di Rienzo, Guzmán & Casanoves, 2002) were performed, and assumptions of equal variance and normality were checked using Levene and Shapiro–Wilks tests, respectively (Montgomery, 1991). When assumptions of the statistical tests were not met (p values of Levene and Shapiro–Wilks tests < 0.05), nonparametric Kruskal–Wallis tests (Kruskal & Wallis, 1952) were used. All the analyses were performed using INFOSTAT 2011 (Di Rienzo *et al*., 2011). All variables were tested for sexual dimorphism with either Student's t or Kruskal–Wallis tests (if the above assumptions were not met). In cases where SVL was significantly different between sexes within species, all other morphometric variables were standardized by SVL, and univariate tests were performed on these new variables (Das & Grismer, 2003; Vukov *et al*., 2006; Shepard *et al*., 2011).

RESULTS

HISTORICAL REVIEW

Species belonging to the *L. lineomaculatus* section possess a long taxonomic history accompanied by many of the nomenclatural changes proposed for *Liolaemus*. The discovery of the first species of this section began with the arrival of the H.M.S. Beagle in the Santa Cruz River in Patagonia (17 April 1834), when Charles Darwin collected, drew, and 'described' in his notes two species of lizards (later formally described) from the *L. lineomaculatus* section, both from Puerto Deseado. The rate of species descriptions in the *L. lineomaculatus* section can be divided into three periods. The first period included the years 1850–1900 and was followed by 70 years of stasis during which no descriptions were published. A second period with a high rate of species descriptions occurred from 1971 to 1997, and then low-cost DNA sequencing techniques coupled with increased accessibility to remote places characterizes the last (present) period of species description, which spans 2005 to the present.

The first species described in the *L. lineomaculatus* section was discovered by Charles Darwin in 1834, but was not formally described until almost ten years later as *L. kingii* (originally as *Proctotretus kingii*), with Puerto Deseado (Argentina) as its type locality (Bell, 1843). The description of this species was based on head form, coloration, shape of the auditory meatus, and number and shape of scales. The second species described from the *L. lineomaculatus* section was *L. magellanicus* (originally *Proctotretus magellanicus*) whose type locality is Havre Pecquet, Chile, in the Strait of Magellan (Hombron & Jacquinot, 1847). The third species belonging to the section was *L. lineomaculatus* (Boulenger, 1885), which has the same type locality as *L. kingii*, Puerto Deseado (restricted by Donoso-Barros, 1966), and was also collected by C. Darwin. An early revision of the genus *Liolaemus* by Koslowsky (1896, 1898) considered *L. lineomaculatus* as a subspecies, or a variety, of *L. magellanicus*; however, his proposal did not prosper. Anderson (1898) resumed the research previously done on amphibian and reptile species inhabiting Tierra del Fuego and listed *L. magellanicus* and *L. li-*

neomaculatus as different species. The last species described in this first period was *L. hatcheri*, with the type locality restricted to the area between Pueyrredón and Buenos Aires Lakes (Stejneger, 1909); this new species was not considered in several publications in which different collections were revised (Hellmich, 1934, 1952; Burt & Burt, 1935; Donoso-Barros & Codoceo, 1962), until 1970 when the species was considered a synonym of *L. magellanicus* (Peters & Donoso-Barros, 1970).

The second period of progress in taxonomy of this section, characterized by a high rate of species descriptions, started with the proposal of the genus *Vilcunia* in 1971; the new species *L. silvanae* (originally *Vilcunia silvanae*) was described as the type species of this new genus with Puesto Lebrum, Lago Buenos Aires Plateau (Argentina) as the type locality (Donoso-Barros & Cei, 1971). This new genus was characterized by the absence of precloacal pores in both sexes and the presence of trifid scales. *Liolaemus archeforus* was described in the same publication, based on material from the same type locality (Donoso-Barros & Cei, 1971). Additionally in the same year, Gallardo (1971) published a paper identifying a parallelism between lizard and plant distributions, in which he proposed that lizards could be grouped by size and aspect. Gallardo classified *L. lineomaculatus*, *L. magellanicus*, and *L. hatcheri* in a different group relative to *L. kingii*, and also mentioned that *L. hatcheri* was similar to *L. magellanicus*. Again, in the same year, *L. magellanicus* and *L. lineomaculatus* were compared and proposed to belong to a group called the '*L. magellanicus* group' because of their morphological resemblance and their shared southern distribution (Cei, 1971). Donoso-Barros (1973) described *L. sarmientoi* from lizards taken at Monte Aymond (in southern Santa Cruz province, Argentina), the type locality, and included the new species in the '*L. kingii* group' without further explanation.

Since 1975, several proposals to group all of the aforementioned species (*L. archeforus*, *L. hatcheri*, *L. kingii*, *L. lineomaculatus*, *L. magellanicus*, *L. sarmientoi*, and *L. silvanae*) have been published. The first of these was by Cei (1975) using serological and morphological data; Cei proposed the '*L. kingii* complex', composed of *L. archeforus*, *L. kingii*, and *L. sarmientoi*. In the same publication Cei (1975) proposed subspecific status for *L. archeforus* and *L. sarmientoi* and considered *L. archeforus* to be an ancient stock of a primitive *L. kingii* line, although morphological features to define the complex were not given.

Cei (1979) recognized two complexes that have not undergone recent (post-Pleistocene) speciation. The first group, the '*L. kingii-archeforus* complex' included *L. archeforus*, *L. kingii*, and *L. sarmientoi*, was characterized by no femoral patch; 'moderately high' number of keeled scales around midbody (58–84); high number of precloacal pores (6–10); short legs and tail (slightly longer than body); variegated ventral colour pattern; absence of dark coloration in nuchal region; and a dark dorsal coloration with a series of yellowish or whitish transversal bars. The second group, the '*L. magellanicus-lineomaculatus* complex' was composed of *L. magellanicus* and *L. lineomaculatus* and characterized by no femoral patch; low number of large mucronated dorsally acuminate scales around midbody (40–70); moderate number of precloacal pores (3–8); very short limbs and tail; absence of dark coloration in nuchal or ventral melanism; and dorsal coloration being 'irregularly spotted' with black and white longitudinal lines (Cei, 1979).

Liolaemus somuncurae (*L. kingii somuncurae*) was described as a subspecies whose type locality was the Somuncurá Plateau (Río Negro, Argentina) near Lago Raimundo (Cei & Scolaro, 1981). A close morphological similarity between this new 'subspecies' and *L. kingii* was found, and the authors suggested that this pattern could be explained by incipient speciation initiated during a dry glacial phase of the Pleistocene (Cei & Scolaro, 1981). Interestingly, Cei & Scolaro (1981) placed those species plus *L. archeforus* and *L. sarmientoi* within the '*L. kingii* group' (Donoso-Barros, 1973) but they did not use the name '*L. kingii-archeforus* complex' proposed in Cei's previous publication (Cei, 1979).

Liolaemus gallardoi (*L. archeforus gallardoi*) was described by Cei & Scolaro (1982a) with the type locality identified as the 'Aguila-Asador Plateau' in Santa Cruz province (Argentina). This was the first paper in which the '*L. kingii-archeforus* complex' was formally divided in two groups and diagnostic characters were provided to identify each one. The first group was the '*L. kingii* group' formed by *L. kingii* and *L. somuncurae* and characterized by a high number of small scales around midbody (75–94). The second group was deemed the '*L. archeforus* group' formed by *L. archeforus*, *L. gallardoi*, and *L. sarmientoi*, and was characterized by a low number of big, mucronated scales around the midbody (58–78), which suggested that the latter two species in the group had a close relationship (inferred from size and shape of dorsal scales). Cei & Scolaro (1982a) hypothesized that the '*L. archeforus* group' was evolutionarily derived from the '*L. kingii* group'. The same year, *Liolaemus periglacialis* (as *Vilcunia periglacialis*) was described from the surroundings of Belgrano Lake (Santa Cruz, Argentina), the type locality (Cei & Scolaro, 1982b). However, the species was later considered to be a junior synonym of *L. hatcheri* (Etheridge, 1998). Cei & Scolaro (1982b) made an important comparison between *Vilcunia* and *Liolaemus* in which they provided diagnostic characters to differentiate them. The main characters separating *Vilcunia* from *Liolaemus* were the presence of dorsal trifid scales, acuminate femoral scales, and absence of precloacal pores in *Vilcunia*.

In 1983, the new subspecies *L. baguali* (*L. kingii baguali*) was described from the '*L. kingii* group' (Cei & Scolaro, 1983) with western Santa Cruz province, the Sierra del Bagual (Argentina), indicated as the type locality. In this publication the idea of two groups (*L. archeforus* and *L. kingii*) was reinforced and the groups were geographically restricted. The '*L. archeforus* group' was composed of isolated populations distributed in volcanic mountains along the western area of Patagonia, whereas the '*L. kingii* group' was described with a more widespread distribution, encompassing lowlands from the coast to the sub-Andean region of the Santa Cruz province.

Laurent (1983) performed an early taxonomic and evolutionary study using morphological variables of several species of *Liolaemus*, and described a 'primitive line', sister to an 'ancestral line' that gave rise to two main groups in *Liolaemus*. This 'primitive line' was formed by *L. kingii* and *L. archeforus*, which were deemed primitive because both had characters that were present in the two main groups, whereas the 'ancestral line' was formed by *L. magellanicus* and *L. lineomaculatus* in a sister relationship with *Vilcunia* (*L. hatcheri* and *L. silvanae* based on the absence of precloacal pores).

Two years later, based on morphological characters from a larger number of species, the relationships proposed by Laurent (1983) were reinforced by additional studies, the generic name *Rhytidodeira* (Girard, 1857) was assigned to the primitive group formed by the species of the *L. kingii-archeforus* group plus the species *Liolaemus ruizleali* (although this species was later synonymized with *Liolaemus rothi* and removed from the group; Cei & Scolaro, 1987; Cei, 1990), and *L. kingii* was designated as the type species of this new genus (Laurent, 1985). *Liolaemus lineomaculatus* was included in *Vilcunia* (a genus characterized by absence of precloacal pores, small scale size, short tail, small auditory meatus, and big mental scale), and a monotypic group formed by *L. magellanicus* (based on a small auditory meatus and big mental scale) was proposed (Laurent, 1985). In this publication, the first phylogenetic hypothesis for the group (*Liolaemus sensu stricto*,((*L. magellanicus*, *Vilcunia*),(*L. kingi-archeforus* group, *Eulaemus*))) was proposed; but Laurent (1985) also suggested the alternative hypothesis that the '*L. kingii-archeforus* group' belonged to the *Vilcunia*–*L. magellanicus* branch forming a 'basal' or ancestral stock. We want to emphasize here that from this interpretation, the name 'basal' was used for about 25 years to recognize the group of species belonging to the *L. lineomaculatus* section.

In 1986, Cei wrote the first monograph about reptiles of southern Argentina in which the '*L. kingii* group', '*L. archeforus* group', and '*L. magellanicus* group' were included within the genus *Liolaemus*. Moreover, he recognized the '*L. magellanicus* group' to include the southern species *L. magellanicus* and *L. lineomaculatus*, and described them as being characterized by short tails, bristly and mucronated scales, and light dorsolateral bands and asymmetric blotches along the vertebral line. He also recognized *Vilcunia* as a genus (Cei, 1986).

In 1995, Laurent attempted to reinforce the subgeneric status of *Vilcunia* and proposed the monotypic subgenus *Austrolaemus*, for which he designated *L. magellanicus* as the type species, but his ideas did not gain acceptance since other systematic changes were proposed in the same year (Laurent, 1995). Etheridge (1995) used data on squamation, neck folds, skull and skeleton measurements to revise the taxonomic arrangement of Liolaeminae, and identified several synapomorphies supporting the monophyletic status of *Liolaemus*. Etheridge argued that all the species included in *Vilcunia*, *Rhytidodeira*, and *Eulaemus* (amongst other genera) should be included in *Liolaemus*, and that although *Vilcunia* and *Eulaemus* might represent monophyletic subsets of *Liolaemus*, he argued that they should not be used as formal names for taxa until their monophyletic statuses were verified by cladistic analysis (Etheridge, 1995). In the same publication, Etheridge proposed the '*L. lineomaculatus*' group including the species *L. lineomaculatus*, *L. silvanae*, and *L. hatcheri* (the last two forming a subgroup called *L. silvanae*). Characteristics cited as unifying the *L. lineomaculatus* group included absence of precloacal pores and the presence of dorsal tridentate scales, whereas the *L. silvanae* group (*L. silvanae* and *L. hatcheri*) was distinguished by keeled and imbricate lateral nuchal scales and subimbricated postfemoral scales (Etheridge, 1995).

Liolaemus zullyae (*L. zullyi*) was described by Cei & Scolaro (1996), with the type locality designated as the Rio Zeballos valley (Santa Cruz, Argentina). Interestingly, although the mean scale count around the midbody presented in the description was 86.6, the species was included in the '*L. archeforus* group' (scales around midbody 58–78). Cei & Scolaro (1996) stated that the new species differed from the other *Liolaemus* species, but not from the ones included in the *L. kingii* and *L. archeforus* groups, by having the characteristics listed in Etheridge (1995: appendix 2, part A). Moreover, they claimed '*L. zullyi* along with other species of the *archeforus* group, may be distinguished from members of the *kingii* group by its larger forelimbs, the more strongly keeled dorsal or lateral scales, the prevailing presence of red and orange-red scales in dorsal and lateral patterns, and a generally stronger ventral pigmentation leading to a true condition of melanism' (Cei & Scolaro, 1996: 393). We believe that a chronological problem existed with the publication of this article relative to another article published the next year by the same authors (Scolaro & Cei, 1997), because differences amongst species of the *L. archeforus* and *L. kingii* groups were listed in 1997, yet the species *L. zullyae* was not mentioned in the publication. We also note that the authors recognized that the elevated number of midbody scales indicated that *L. zullyae* should belong to the *L. kingii* group; however, the authors justified the inclusion of *L. zullyae* in the *L. archeforus* group based on the characteristics discussed above, and claiming that the species shows an 'exceptionally high' number of scales around midbody and that this is the 'most striking condition' of *L. zullyae* lepidosis (Cei & Scolaro, 1996) caused by genetic drift. Several years later, the species name was corrected to *L. zullyae* by Michels & Bauer (2004).

In 1997, three more species were described and the morphological criterion for grouping species in the *L. kingii* or *L. archeforus* group was extended as follows (Scolaro & Cei, 1997). The distribution of the species of the *L. kingii* group was defined to encompass much of Río Negro, Chubut, and Santa Cruz provinces (Argentina), and the group was distinguished based on the following characteristics: (1) dorsal body scales not 'strongly' keeled but 'distinctly' imbricated; (2) number of midbody scales: 72–97 (mean: 79.15); (3) SVL: 62–100 mm; (4) 'relatively' short forelimbs; (5) reddish or yellowish-brown dorsal pattern, with 'prevailing distinct' white or yellowish, black bordered bands mainly with conspicuous central spot; (6) 'unusual' dorsolateral stripes; (7) a low percentage of red-orange dorsolateral scales; (8) light grey or yellowish ventral colour, more or less mottled with black in most of the specimens, seldom melanistic; and (9) five to ten precloacal pores (Scolaro & Cei, 1997). The distribution of the species of the *L. archeforus* group was considered sub-Andean and austral, inhabiting only Santa Cruz province, and the defining characteristics of the group were shown to include: (1) 'more strongly' keeled and 'sharply' imbricated dorsal body scales; (2) number of midbody scales: 58–78 (mean: 68.94); (3) SVL: 64–102 mm (not diagnostic but suggesting a stouter body); (4) larger forelimbs; (5) dark grey or brownish dorsal pattern, with white or yellow transverse broken lines that are irregular and almost indistinct in many specimens; (6) broken dorsolateral stripes; (7) 'noticeable' percentage of red-orange dorsolateral scales; (8) strongly black-mottled ventral zone, strong melanism in most of the forms; and (9) number of precloacal pores: six to eight (Scolaro & Cei, 1997). In the same publication, three species were described. Belonging to the *L. kingii* group, *L. tristis* was described with the type locality at Lagunas sin Fondo Plateau (Santa Cruz, Argentina); and within the '*L. archeforus* group', *L. tari* was described from a type locality of del Viento Plateau, and *L. escarchadosi* was described from Cordón de los Escarchados (both places in Santa Cruz, Argentina). Differences amongst these species and other members of the *L. kingii* and *L. archeforus* groups were evaluated and a dichotomous key was presented. We should mention here that the species *L. zullyae* was not included in the analysis owing to a lag in publication (see above), and although the authors recognized that most of the morphometric and meristic characters of *L. escarchadosi* were statistically too weak to be used for diagnostic proposes, they presented several differences in coloration patterns amongst species. Finally, the authors quoted an Etheridge personal communication highlighting that all the characters shared by species belonging to both groups were plesiomorphic, e.g. high number of precloacal pores, granular lateral nuchal scales, keeled and imbricated dorsal scales, and the absence of a hypertrophied puboischiotibialis muscle, amongst others (Scolaro & Cei, 1997).

The final and most recent period of species descriptions and nomenclatural changes to the *L. lineomaculatus* section began with the first quantitative evolutionary analysis of several species of *Liolaemus* using allozyme data. Based on these data, Young Downey (1998) supported the monophyly of *Liolaemus* and its two major groups: *Eulaemus* and *Liolaemus sensu stricto*. Moreover, a clade formed by *L. kingii*, *L. lineomaculatus*, *L. archeforus*, and *L. silvanae* was recovered, and hypothesized to be the sister group of the *L. montanus* section, both belonging to the *Eulaemus* group (Young Downey, 1998). Two years later, the same relationships were corroborated by analyses of mitochondrial DNA sequence, from which divergence between *Liolaemus sensu stricto* and *Eulaemus* was inferred to have been ~12.6 Mya or earlier (the authors did not provide confidence intervals or error terms in their estimates); the group formed by *L. lineomaculatus*, *L. magellanicus*, and *L. somuncurae* was named the '*L. lineomaculatus* section' (Schulte *et al.*, 2000), the name that is currently used to recognize this group of southernmost species. Morando (2004) obtained similar results using analyses of both nuclear and mitochondrial genes. To our knowledge, the only paper that has not recovered the monophyly of the *L. lineomaculatus* section was published by Lobo

(2001) based on several morphological traits, in which the species *L. lineomaculatus* was recovered within '*Liolaemus sensu stricto* or Chilean group'; however, the author recognized the necessity of further studies to confirm or reject this hypothesis (Lobo, 2001).

Espinoza *et al*. (2004) using morphology and mitochondrial genes published a phylogeny of *Liolaemus* that included several species of the *L. lineomaculatus* section, but they did not present support values for any of the relationships. However, the relationships recovered amongst species of this section were as follows: ((*L. hatcheri*, (*L. lineomaculatus*, *L. silvanae*)), (*L. magellanicus*, (*L. kingii*, ((*L. escarchadosi*, (*L. tari*, *L. baguali*)), ((*L. sarmientoi*, *L. gallardoi*), (*L. zullyae*, *L. archeforus*)))))).

In 2005, the new species *Liolaemus scolaroi* (*L. donosolaemus scolaroi*) was described with a designated type locality in Jeimini, XI administrative region of Chile, and this new species was included in the *L. archeforus* group (Pincheira-Donoso & Núñez, 2005). As no clear synapomorphic characters that could be used to support the monophyly of a group formed by the *L. kingii* and *L. archeforus* groups was available, Pincheira-Donoso & Núñez (2005) grouped all of these species in a new subgenus named *Donosolaemus*, characterized by (1) nasal and rostral scales separated by anterior lorilabials; (2) absence of curved supralabial scales; (3) absence of point and projecting outer ciliaries; (4) absence of femoral patch; (5) high number > 5 of precloacal pores; and (6) straight tibia, lacking hypertrophied puboischiotibialis and anterior tibialis muscles (Pincheira-Donoso & Núñez, 2005: 32). Three of these are based on the absence of widespread characters of *Liolaemus* and the other three characters are also present in other *Liolaemus* groups, thus the use of the name '*Donosolaemus*' has been discouraged (see Lobo *et al*., 2010; Breitman *et al*., 2011a).

Liolaemus uptoni, another species of the *L. lineomaculatus* section related to *L. somuncurae*, was described in 2006 with type locality Bajada del Buey (Chubut, Argentina). For its description, the species was mainly compared with *L. somuncurae*, but comparisons amongst the new species and other species of the *L. kingii* group were also mentioned (Scolaro & Cei, 2006). The same year *L. kolengh* was described with type locality Zeballos Hill (Santa Cruz, Argentina), included in the '*L. silvanae* group'; *L. kolengh* was compared with the previously described species of the *L. lineomaculatus* group and a key for identification of males was proposed (Abdala & Lobo, 2006). In 2009, *L. chacabucoense* was described with type locality Chacabuco River valley (Aisén, Chile); the new species was proposed to belong to the *L. archeforus* group, differing from the other species mainly in body size (Núñez & Scolaro, 2009).

Schulte & Moreno-Roark (2010), extended the results and the data set of Espinoza *et al*. (2004) and published a phylogeny (using mitochondrial markers and a likelihood approximation) in which species of the *L. lineomaculatus* section were recovered in the following topology: ((*L. hatcheri*, (*L. silvanae*, *L. lineomaculatus*)), (*L. magellanicus*, ((*L. kingii*, *L. somuncurae*), ((*L. escarchadosi*, (*L. baguali*, *L. tari*)), ((*L. archeforus*, *L. zullyae*), (*L. gallardoi*, *L. sarmientoi*)))))). The next year Breitman *et al*. (2011a), based on nine markers (nuclear and mitochondrial) and two phylogenetic approaches (species tree and concatenation approaches with Bayesian, likelihood, and parsimony analyses), presented another phylogeny including all recognized species of the *L. lineomaculatus* section, and four main clades were recovered (see Introduction). These three papers (Espinoza *et al*., 2004; Schulte & Moreno-Roark, 2010; Breitman *et al*., 2011a) were based on molecular markers and recovered concordant topologies except for the position of *L. kingii*; but they did not recover two of the groups previously described in the 'morphological arrangement hypothesis' as clades (the *L. kingii* and the *L. archeforus* groups). Moreover, Breitman *et al*. (2011a) recovered a *L. somuncurae* group (*L. somuncurae* + *L. uptoni*) in a sister relationship with a clade formed by the remaining species of the morphological *L. kingii* and *L. archeforus* groups. Breitman *et al*. (2011a) used the name '*kingii* + *archeforus* group' to refer to this latter clade, and estimated that it had diverged from the *L. somuncurae* group ~4.25 Mya (95% HPD = 3.17–5.48). Incongruence amongst the concatenation vs. the species tree approaches were found with respect to the placement of the candidate species *Liolaemus* sp. 4 (belonging to the *L. somuncurae* group or not included in it), and Breitman *et al*. (2011a) offered several hypotheses for these patterns. These included a possible hybrid origin of the species *Liolaemus* sp. 4, although the authors recognized the need for further study to clarify the status and species composition of the *L. somuncurae* group (Breitman *et al*., 2011a).

The last two species recently described for the *L. lineomaculatus* group were *L. morandae* from south of Chubut province (Argentina) and *L. avilae* from Puesto Lebrum (Santa Cruz, Argentina; Breitman *et al*., 2011b); both species were compared with the remaining species of the group. The last recently described species of the section is *L. caparensis* from Campo Las Piedras Plateau (Santa Cruz, Argentina); this new species was compared with *L. magellanicus* (Breitman *et al*., 2011c) and both were proposed to comprise the *L. magellanicus* group (Breitman *et al*., 2011a, c). Including these three last described species, the actual number of species within the *L. lineomaculatus* section is 21; but Breitman *et al*. (2012) and

M. F. Breitman (unpubl. data) found that at least ten more candidate species are present in the *L. lineomaculatus* section, several of which are currently undergoing formal description.

Table 2 summarizes the details of this review and includes characters that have been proposed to be diagnostic amongst groups. We did not include the *L. magellanicus* group (*sensu* Cei, 1986) in this table because when it was morphologically diagnosed, the species *L. lineomaculatus* was included, and (since then) sufficient evidence has been presented to consider *L. lineomaculatus* more closely related to other species of the *L. lineomaculatus* group (*sensu* Etheridge, 1995). Figure 2 shows the phylogenetic relationships proposed for most of the species of the section by Schulte & Moreno-Roark (2010; which includes data from Espinoza *et al*., 2004) and Breitman *et al*., 2011a.

STATISTICAL ANALYSES

Evaluating the morphological hypothesis amongst groups

Differences amongst morphological groups recognized in the literature (Table 2) were evaluated qualitatively. Figure 3 depicts shape, disposition, and size of dorsal scales of one adult male from each species collected from its type locality or nearby. Amongst species in the *L. kingii* and *L. archeforus* groups scales exhibited variation in keel expression, imbrication, size, and mucronation; no differentiation in the characters amongst groups could be found to match what has previously been described in the literature. All species of the *L. lineomaculatus* group possess keeled tridentate scales, although these scale types were scarce in individuals of *L. avilae*, *L. lineomaculatus*, and *L. morandae*.

Table 3 summarizes the results of qualitative comparisons amongst species of each group based on dorsal background colour, presence of red/orange scales, and belly colour. In contrast to descriptions in the literature, we found that reddish/yellowish-brown and grey dorsal background colours were present in all groups; and none were diagnosed by unique dorsal background colours. Red or orange scales occurred in nearly all species of the *L. kingii* and the *L. archeforus* groups, one species of the *L. lineomaculatus* group, and neither species of the *L. magellanicus* group. A higher percentage of red scales was not observed amongst species of the *L. archeforus* group compared with those of the *L. kingii* group, and we found no evidence that grey or yellowish colours were exclusive to the *L. kingii* group, as suggested in the literature.

Although 30% of the *L. kingii* group's individuals were striped dorsally with complete or broken bands and no *L. archeforus* group's individuals showed this pattern, this character was far from exclusive or 'prevailing' in the *L. kingii* group. Fully 75% of *L. archeforus* group males had indistinct or almost indistinct dorsal bands, but this percentage was not observed in females (Tables 2, 4, Appendix 2). Small differences in vertebral and paravertebral lines were observed between females of the *L. kingii* and *L. archeforus* groups, but no differences were observed when males were compared. Moreover, no differences in dorsolateral patterns or ventral variegation were found between the *L. kingii* and *L. archeforus* groups, as proposed in the literature (Tables 2, 4, Appendix 2). Once again, in contradiction to what has previously been reported in the literature, we observed whole ventral melanism in only 12.5% of *L. kingii* and *L. archeforus* group males, and we found no differences in the percentage of whole ventral melanism amongst groups (Tables 2, 4, Appendix 2).

As sexual dimorphism in the variable midbody scales was not observed within each group (Appendix 3), we performed a nonparametric Kruskal–Wallis test amongst groups (without sex discrimination). Statistical differences in midbody scales were observed amongst all groups ($H = 243.89$, $P = 0.0001$). However, we recovered highly overlapping ranges [*L. kingii* group: 75.72 ± 5.43 (64–93); *L. archeforus* group: 69.97 ± 6.21 (55–84)] that were rather different from those proposed in the literature [*L. kingii* group: 79.15 (72–97); *L. archeforus* group: 68.94 (58–78)] (Fig. 4).

We compared SVL amongst groups using ANOVA (because assumptions for this test were met) and found differences amongst groups partitioned by sex (females: $F = 36.67$, $P = 0.0001$; males: $F = 57.42$, $P = 0.0001$). Although DGC comparisons did not show differences between the *L. kingii* and *L. archeforus* groups, we found statistically significant differences amongst the *L. lineomaculatus*, *L. magellanicus*, and *L. kingii-archeforus* groups (Fig. 5). Moreover, only *L. tari* reached the SVL reported in the literature (101 mm), whereas most of the other species did not reach 90 mm (Fig. 6).

We did not find that forelimb length was shorter in specimens of the *L. kingii* group relative to the *L. archeforus* group, as reported in the literature. Forelimb length was calculated as RUL + HAL with females and males analysed separately because there were statistical differences between them within each species, with males having longer forelimbs than females (Appendix 4). Differences in forelimb length without SVL standardization calculated using ANOVA were significant (females: $F = 21.49$, $P = 0.0001$; males: $F = 34.65$, $P = 0.0001$) amongst the *L. lineomaculatus*, *L. magellanicus*, and *L. kingii-archeforus* groups, but

Table 2. Species included in each traditional morphological group of the *Liolaemus lineomaculatus* section (*Liolaemus kingii, Liolaemus archeforus*, and *L. lineomaculatus* groups). Distribution and morphological differences are taken from bibliographic references (see 'Historical review' section and bottom of the table); quoted sentences were textually extracted from the source. Blank cells indicate no available data in the literature. The species *Liolaemus magellanicus* and *Liolaemus caparensis* were not formally included in any of the traditional morphological groups; thus they are not included in this table. Results from the present study are given in the last column. 'Rejected' indicates that alluded morphological differences amongst groups were not recovered with our data

Variable	*Liolaemus kingii* group	*Liolaemus archeforus* group	*Liolaemus lineomaculatus* group	Present study
Species	*Liolaemus baguali*, *Liolaemus kingii*, *Liolaemus somuncurae*, *Liolaemus tristis*, *Liolaemus uptoni*	*Liolaemus archeforus*, *Liolaemus chacabucoense*, *Liolaemus escarchadosi*, *Liolaemus gallardoi*, *Liolaemus sarmientoi*, *Liolaemus scolaroi*, *Liolaemus tari*, *Liolaemus zullyae*	*Liolaemus avilae*, *Liolaemus hatcheri*, *Liolaemus kolengh*, *Liolaemus lineomaculatus*, *Liolaemus morandae*, *Liolaemus silvanae*	No evidence for separation of these species in the *L. kingii* and *L. archeforus* groups
Distribution	'Widespread, from the coast to the sub-andean region of the Santa Cruz'. In Chubut and on the Somuncurá Plateau (Río Negro)	'Isolated populations in volcanic mountains along the western area of Santa Cruz'	Some widespread from Neuquén to Santa Cruz, others endemic to Andean plateaus of Santa Cruz	Not all the species of the *L. archeforus* group are isolated. Some species of the *L. kingii* group are isolated
Dorsal scales	'Not strongly keeled, distinctly imbricated'; small scales	'More strongly keeled and sharply imbricated'; big and mucronated	Presence of keeled tridentate scales	Partially Rejected. No differentiation between scales of *L. kingii* and *L. archeforus* groups. Tridentate scales were observed only in the *L. lineomaculatus* group
Midbody scales	72–97 (mean: 79.15)	58–78 (mean: 68.94)	–	Partially observed. Differences in mean but not in ranges (Figure 4)
SVL	62–100 mm	64–102 mm	–	Not diagnostic
Forelimbs	'Relatively short'	'Larger than in *kingii* group'	–	Rejected. No differences in fore limb length between *L. kingii* and *L. archeforus* groups (Appendix 4)
Dorsal background	'Reddish/yellowish-brown'	'Dark gray or brownish'	–	Rejected. No differences in coloration between groups (Table 3)
Dorsal pattern	'Prevailing white or yellowish black bordered bands mainly with conspicuous central spot'	'White or yellowish transverse streaks or broken irregular and almost indistinct lines'	–	Not exclusive. Tendency of absence of bands was observed in males of the *L. archeforus* group. Only 30% of individuals of the *L. kingii* group showed bands (Table 4)
Dorsolateral lines	Unusually	Broken lines	–	Rejected. Same percentage of dorsolateral lines in both groups (Table 4)
% Red/orange scales	Very low	Noticeable percentage	–	Rejected. Almost all the species of both groups have red or orange scales (Table 3)
Belly colour	Whitish grey or yellowish	–	–	Rejected. Several colours were observed including: black, white, orange, and yellow (Table 3)
Variegation	More or less variegated	Strongly variegated	–	Rejected. 90% of males and females of both groups have ventral variegation (Table 4)
Melanism	–	Usually whole ventral melanism	–	Rejected. No differences in ventral melanism were observed (Table 4)
No. of precloacal pores	5–10	6–8	Absent	Rejected (similar values between *L. kingii* and *L. archeforus* groups)
Source	Cei & Scolaro, 1982a, 1983; Scolaro & Cei, 1997	Cei & Scolaro, 1982a, 1983; Scolaro & Cei, 1997	Etheridge, 1995	

SVL, snout–vent length.

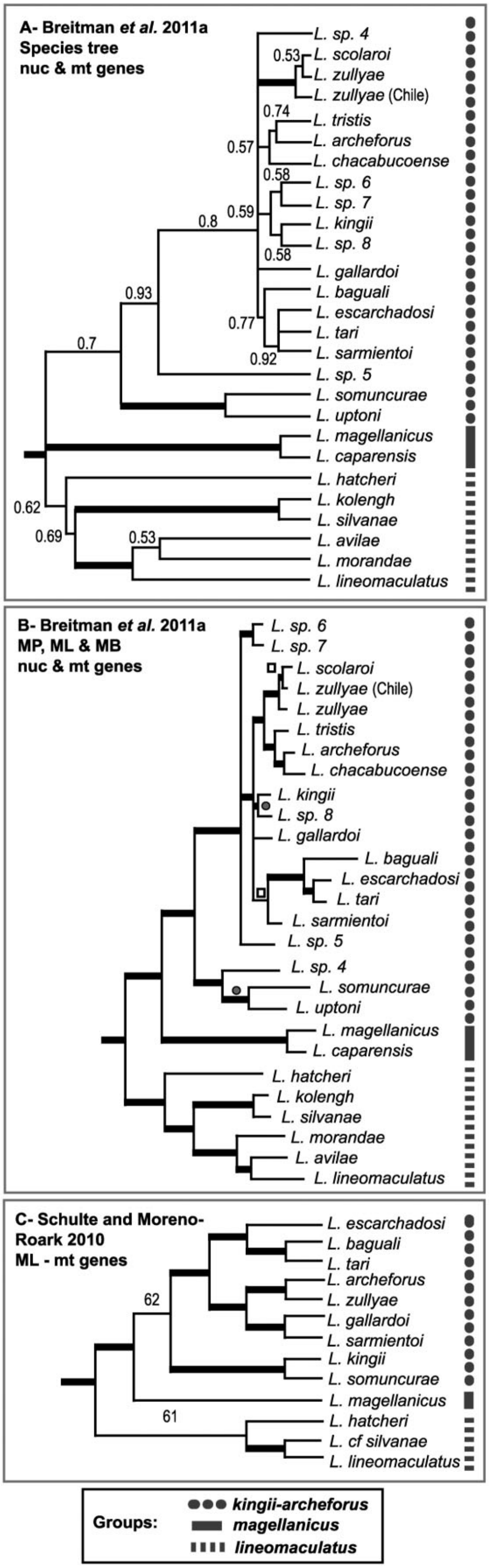


Figure 2. Phylogenetic relationships hypothesized for the *Liolaemus lineomaculatus* section using nuclear (nu) and/or mitochondrial (mt) genes; A, species tree inferred using mt and nu genes by Breitman *et al*. (2011a); posterior probability (*Pp*) values higher than 0.5 are shown, bold branches show clades with $Pp > 0.95$; B, Bayesian tree, representing concatenated analyses and summarizing information from maximum parsimony (MP) and maximum likelihood (ML) methods from Breitman *et al*. (2011a); nodes with high support from three methods (MP jack-knife and ML bootstrap > 0.70; $Pp > 0.95$) are identified by bold branches; open squares show nodes with weak MP support, and circles nodes with weak MP and ML support; C, ML tree recovered using mt genes by Schulte & Moreno-Roark (2010).

not between the *L. kingii* and *L. archeforus* groups. When differences in fore limb length were evaluated using the standardized (by SVL) data set, no statistical significance was found across the four morphological groups (females: $F = 3.07$, $P = 0.38$; for males, although the ANOVA's *P*-value was significant, no differences were found using DGC comparisons, meaning that no differences were recovered: $H = 30.37$, $P = 0.0001$).Whereas males of the *L. lineomaculatus* group did not have precloacal pores, this variable did not differ between males of the *L. kingii* and *L. archeforus* groups [*L. kingii* group: 7.21 (5–10); *L. archeforus* group: 7.39 (4–11)], although these values were higher than those for the *L. magellanicus* group [3.67 (3–5)].

Multivariate analysis showed sexual dimorphism in the *L. kingii* and *L. archeforus* groups for the meristic, morphometric, and standardized (by SVL) morphometric data sets, and in the *L. lineomaculatus* group for the morphometric and standardized morphometric data sets (Table 5). No evidence of differentiation between the *L. kingii* and *L. archeforus* groups was observed in any of the DFAs, whereas differentiation amongst the *L. magellanicus*, *L. lineomaculatus*, and *L. kingii-archeforus* groups was seen.

The DFA of the meristic data set recovered the first two axes with 97.99% of the explained variance. The first axis was mainly explained by VS (0.69), SS (0.39), and MS (0.34) whereas the second axis was mainly explained by DS (–0.62), LS (0.64), SS (0.4), and VS (0.34). Figure 7A shows the bivariate plot for axes 1 and 2. Total classification error of this analysis was 36.36%, and it was particularly high for the *L. archeforus* and *L. kingii* groups separated by sex (*L. archeforus*: females 59.26%, males 47.14%; *L. kingii*: females 51.85%, males 45.1%). This error was low for the *L. lineomaculatus* group (8.51%), and

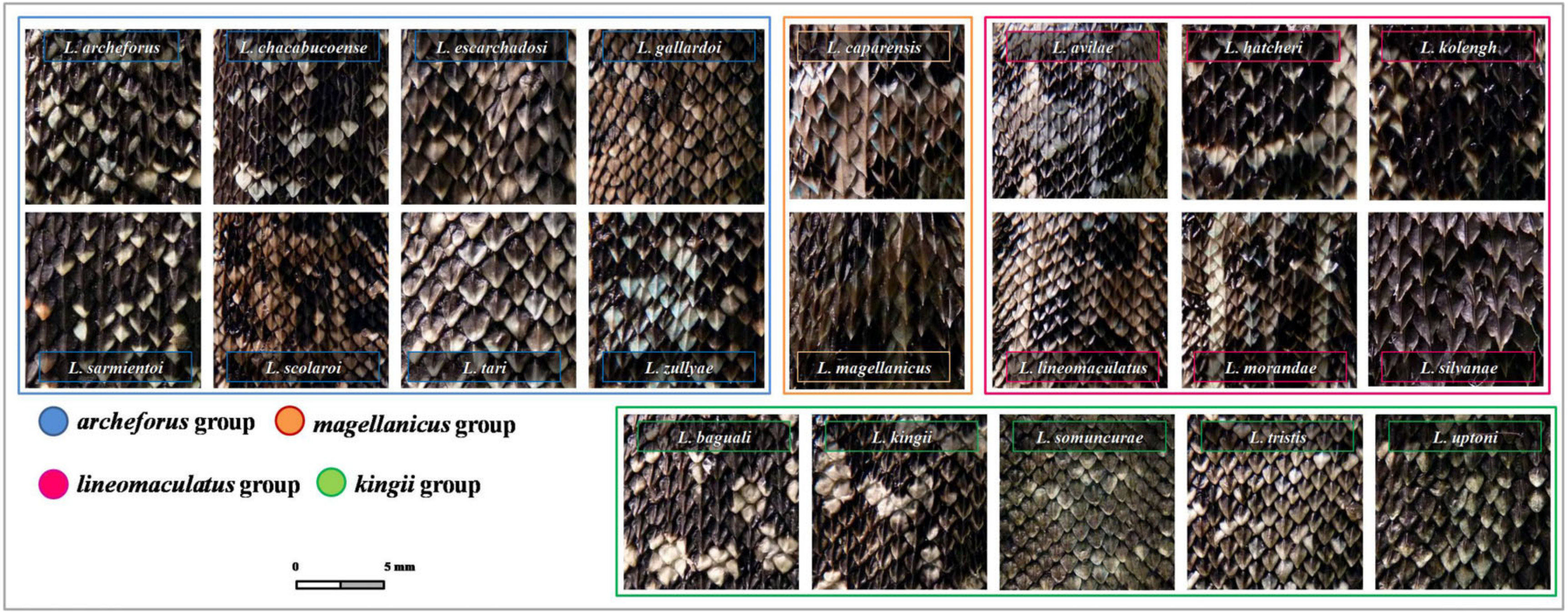


Figure 3. Pictures of dorsal scales of all the species belonging to the *Liolaemus archeforus*, *Liolaemus kingii*, *Liolaemus lineomaculatus*, and *Liolaemus magellanicus* groups. Squares are 1 cm^2. No differences or trends can be observed between scales of the species included in the *L. kingii* and *L. archeforus* groups.

Table 3. Qualitative characters of coloration of specimens discriminated by sex, observed from pictures taken at the time of capture

	Red/orange scales		Dorsal background colours		Dorsal colours		Belly colours	
Species	F	M	F	M	F	M	F	M
Liolaemus baguali	No	No	Br	B	B-W	B-W	B-W	B-W-Y
Liolaemus kingii	Yes	Yes	Br	B	B-W-Br	B-W-Y	B-W-O-Y	B-O-Y
Liolaemus somuncurae	No pict.	Yes	No pict.	R-Br	No pict.	W-R-Br	No pict.	O-Y
Liolaemus tristis	No	Yes	G	B	B-W-Br	B-W-O	B-Y	B-W-O
Liolaemus uptoni	Yes	Yes	R	R	B-R-O-G	R-O-Y	No pict.	B-O-Y
Liolaemus archeforus	No	No	B	B	B-W-Y	B-W-Y	B-W-Y	B-W-Y
Liolaemus chacabucoense	No	Yes	B-Br	B	B-W-Br	B-W-Y	B-W-Y	B-W-Y-O
Liolaemus escarchadosi	Yes	Yes	B	B	B-W-Y-R	B-W-Y-R	B-W-Y-O	B-W-Y-O
Liolaemus gallardoi	Yes	Yes	Br-G	B	B-W-Y-O-Gr-Br	B-Y-O-R-Gr-Br	B-W-G-Bl	B-W-Y-G
Liolaemus sarmientoi	Yes	Yes	B	B-Y	B-Y	B-W-Y-R	B-Y-R	B-Y-R
Liolaemus scolaroi	Yes	Yes	G	G	B-R-Br	B-W-R-Br	B-Y-R	B-W-Y
Liolaemus tari	Yes	Yes	G	B	B-G	B-Y-R-G	B-W	B-W-Y-R
Liolaemus zullyae	Yes	Yes	Br-R	B-G	B-R-Y-Br	B-R-Y-LB	B-W	B-W-Y-O
Liolaemus avilae	No	No	Br-G	Br-G	B-W-Br	B-W-Br	B-W-P	B-W-Y
Liolaemus hatcheri	No	No	Br-G	Br-G	B-Br-G	B-W-Y	B-W	B-W
Liolaemus kolengh	No	Yes	Br	Y-O	B-Br	B-O-Y-Br	B-W-Y	B-W
Liolaemus lineomaculatus	No	No	Br	Br	B-Br-G	B-Br-G	B-W-Y-P	B-W-Y
Liolaemus morandae	No	No	G	G	B-W-Br-G	B-W-Y-Br-G	B-W	B-W-Y
Liolaemus silvanae	No	No	B	B	B-Bl	B-O-Bl	B-Bl	B-Bl
Liolaemus caparensis	No	No	Br	Br	B-W-Y-Br	B-O-Br-LB	B-W	B-W-Y
Liolaemus magellanicus	No pict.	No	No pict.	Br	No pict.	B-W-Y-Br-LB	No pict.	B-W-Y

F, females; M, males; in three cases pictures were not available (No pict.).
Colours: B, black; Bl, blue; Br, brown; G, grey; Gr, green; LB, light blue; O, orange; R, red; W, white; Y, yellow.

zero for the *L. magellanicus* group. From this analysis we found support for the recognition of the *L. lineomaculatus* and *L. magellanicus* groups as morphologically distinct. Although there was a tendency for separation between the *L. kingii* and *L. archeforus* groups, statistically this was insufficient to discriminate these two groups.

The DFA on the morphometric data set recovered the first two axes with 91.58% of the explained variance. The first axis was mainly explained by HW (–0.75), DFH (0.67), AH (0.58), TFL (0.55), HAL (–0.54), FOL (0.49), and DRE (–0.83), whereas the second axis was mainly explained by HL (1.3), DFH (–1.04), DRE (–0.83), and HH (0.52). Figure 7B shows the bivariate plot, with a total classification error of 29.82%; similar values were obtained for all the groups (*L. archeforus* females: 41.03%; *L. archeforus* males: 32.26%; *L. kingii* females: 22.86%; *L. kingii* males: 29.79%; *L. lineomaculatus* females: 28.95%; *L. lineomaculatus* males: 25%; *L. magellanicus*: 25%). Overall, a slight differentiation in size between the *L. kingii-archeforus* and the *L. lineomaculatus-magellanicus* groups was evident, with males being bigger in head size (HL) whereas females showed higher values of SVL, DFH, and DRE (Fig. 7B). Similar results were observed in the DFA of the standardized morphometric (by SVL) data set, with the first two axes explaining 91.1% of the variance. The first axis was mainly explained by DRE/SVL (–0.85), DFH/SVL (–0.57), HL/SVL (0.48), and TFL/SVL (–0.43), whereas the second axis was mainly explained by AH/SVL (0.53), HL/SVL (0.48), and DFH/SVL (–0.44). Figure 7C shows the bivariate plot for axes 1 and 2; the total classification error of this analysis was 30.77%, and similar values were obtained for all the groups (*L. archeforus* females: 38.46%; *L. archeforus* males: 35.48%; *L. kingii* females: 31.43%; *L. kingii* males: 25.53%; *L. lineomaculatus* females: 21.05%; *L. lineomaculatus* males: 27.08%; *L. magellanicus*: 41.18%). As in the previous analysis, the plot shows size differentiation between the *L. kingii-archeforus* and *L. lineomaculatus-magellanicus* groups, and some minor differences between the sexes within them.

Table 4. Dorsal pattern (including vertebral, paravertebral, and dorsal stripe pattern), variegation and melanism present in the morphological groups (expressed in percentage)

	Dorsal stripe pattern (%)		Vertebral pattern (%)		Paravertebral pattern (%)		Dorsolateral pattern (%)		Variegation (%)		Ventral melanism (%)	
Group	F	M	F	M	F	M	F	M	F	M	F	M
Liolaemus magellanicus	–	–	40 N; 60 Y	60 N; 40 Y	40 N; 60 Y	60 N; 40 Y	100 Y	100 Y	75	75	50 m0; 25 m2; 12.5 m3; 12.5 m4	50 m0; 50 m2
Liolaemus lineomaculatus	–	–	85 N; 15 Y	90 N; 10 Y	85 N; 15 Y	90 N; 10 Y	40 N; 60 Y	40 N; 60 Y	80	80	50 m0; 50 m2	50 m0; 12.5 m2; 25 m4; 12.5 m5
Liolaemus kingii	30 A; 40 B; 15 C; 15 D	30 A; 25 B; 10 C; 35 D	50 N; 50 Y	95 N; 5 Y	50 N; 50 Y	75 N; 25 Y	95 N; 5 Y	100 N	90	90	50 m0; 20 m2; 20 m3; 10 m5	50 m0; 25 m2; 12.5 m3; 12.5 m5
Liolaemus archeforus	20 B; 40 C; 40 D	15 B; 10 C; 75 D	75 N; 25 Y	95 N; 5 Y	75 N; 25 Y	75 N; 25 Y	95 N; 5 Y	100 N	90	90	50 m0; 30 m2; 15 m3; 5 m4	50 m0; 12.5 m1; 12.5 m3; 12.5 m4; 12.5 m5

Dorsal stripe pattern: A, complete or slightly broken bands; B, dotted bands; C, irregular bands; D, indistinct or almost indistinct bands; these variables were illustrated and respectively described as 0–20, 40, 60, and 80–100 by Scolaro (1987).

Ventral melanism: m0, no melanism; m1, melanism only present in gular zone; m2, melanism only present on belly; m3, melanism present on all body regions except the cloacal region and limbs; m4, melanism present on all body except for limbs; m5, melanism present on all body.

F, females; M, males.

N, no pattern/coloration; Y, pattern/coloration present.

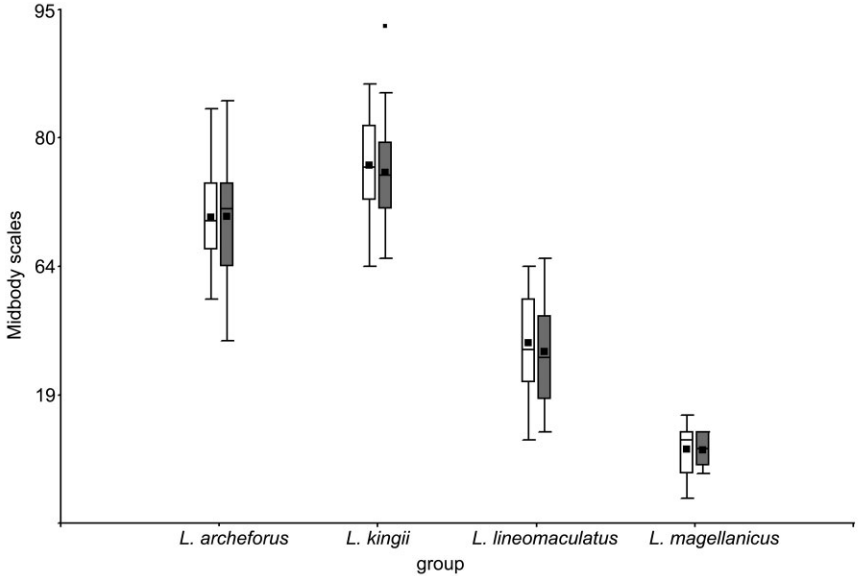


Figure 4. Number of midbody scales amongst individuals of the *Liolaemus archeforus*, *Liolaemus kingii*, *Liolaemus lineomaculatus*, and *Liolaemus magellanicus* groups. No statistically significant differences were found between the *L. kingii* and *L. archeforus* groups. Female data are shown in white and male in grey.

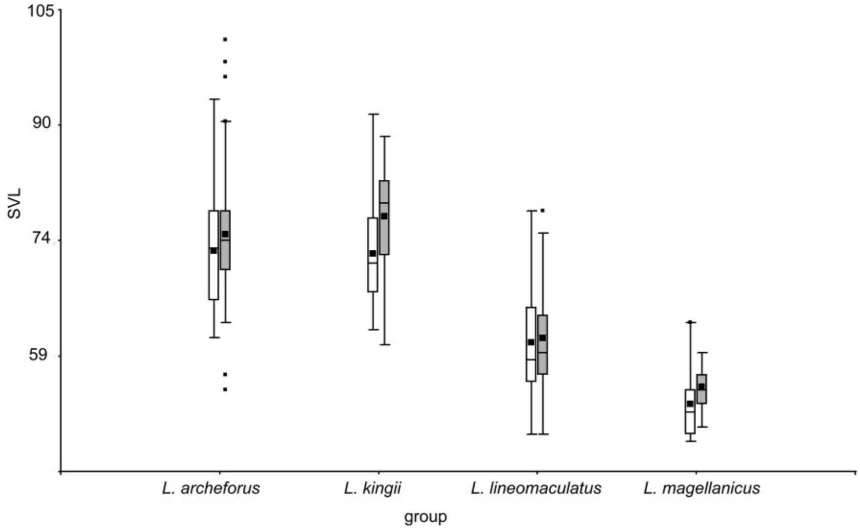


Figure 5. Snout–vent length (SVL, expressed in millimetres) amongst individuals of the *Liolaemus archeforus*, *Liolaemus kingii*, *Liolaemus lineomaculatus*, and *Liolaemus magellanicus* groups. No statistically significant differences were found between the *L. kingii* and *L. archeforus* groups. Female data are shown in white and males in grey.

Morphological comparisons amongst species within groups

The mean, standard deviation, and range of variables from each species discriminated by sex are presented in Appendices 5–7. Sexual dimorphism for the meristic data set was observed only for the characters SS in *L. baguali* and *L. tristis*, IS in *L. sarmientoi*, and DS in *L. silvanae* and *L. tari* (Appendix 5). Sexual dimorphism for the morphological data set was observed in several variables of most of the species, but results ranged from no differences in any studied variables in *L. magellanicus*, to sexual dimorphism in almost all the variables in *L. gallardoi* and *L. tristis* (Appendix 6). Sexual dimorphism in SVL was found in *L. chacabucoense*, *L. kolengh*, and *L. tristis*, and for those species data was standardized by SVL (Appendix 7).

Morphometric and meristic differences amongst all species within each group were found (Tables 6–9; Appendices 8, 9); between-sex tests were performed

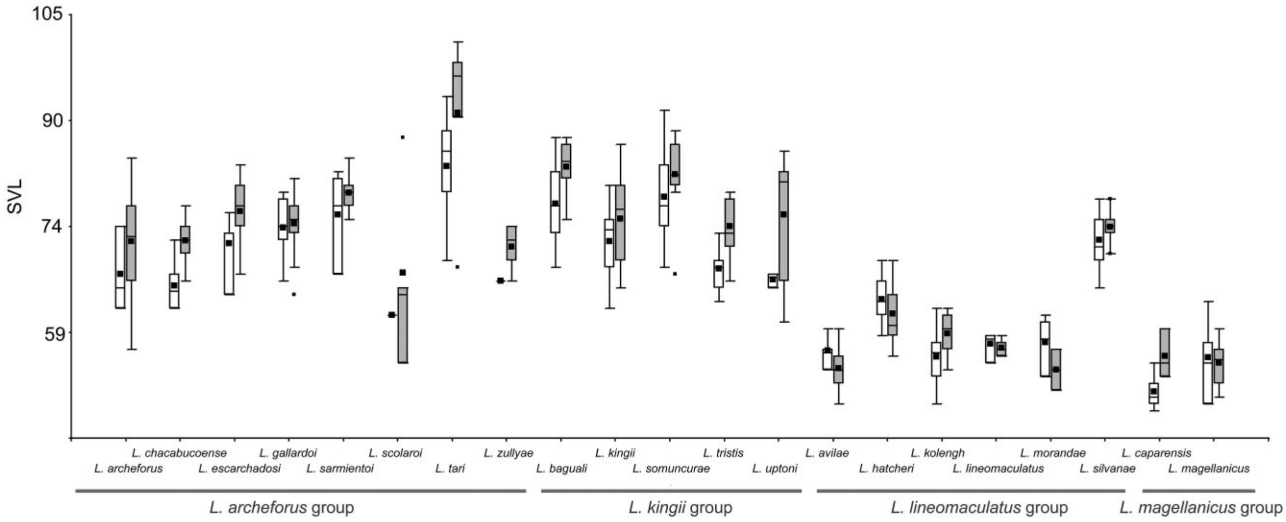


Figure 6. Snout–vent length (SVL, expressed in millimetres) amongst individuals of all the species of the *Liolaemus archeforus*, *Liolaemus kingii*, *Liolaemus lineomaculatus*, and *Liolaemus magellanicus* groups. Female data are shown in white and male in grey.

Table 5. Sexual dimorphism (Sex dim.) in each group evaluated in the different data sets (morphometric, standardized morphometric, and meristic) using MANOVAs

	Morphometric			Morphometric/SVL			Meristic		
Group	Statistic	*P*	Sex dim.	Statistic	*P*	Sex dim.	Statistic	*P*	Sex dim.
Liolaemus archeforus	17.24	0.0001	≠	18.06	0.0001	≠	2.06	0.0384	≠
Liolaemus kingii	16.26	0.0001	≠	13.5	0.0001	≠	2.66	0.0085	≠
Liolaemus lineomaculatus	12.94	0.0001	≠	19.41	0.0001	≠	1.49	0.1658	=
Liolaemus magellanicus	4.21	0.1392	=	6.63	0.1383	=	0.51	0.832	=

≠, presence of sexual dimorphism; =, absence of sexualdimorphism; SVL, snout–vent length.

Figure 7. Graphics of the discriminant function analysis performed on the: A, meristic; B, morphometric; and C, morphometric standardized by snout–vent length (SVL) data sets. In orange *Liolaemus magellanicus* group, in purple *Liolaemus lineomaculatus* group (fuchsia: males, pink: females), in blue *Liolaemus archeforus* group (dark blue: males, light blue: females) and in green *Liolaemus kingii* group (dark green: males, light green: females). No statistically significant differences were found between the *L. kingii* and *L. archeforus* groups. There are significant differences between the *L. magellanicus* and *L. lineomaculatus* groups, and between these and all the species of the *L. kingii* and *L. archeforus* groups. Abbreviations: AH, auditory meatus height; CDF, discriminant function axis; DFH, distance between fore and hind limbs; DRE, distance from rostral to the eye; DS, dorsal scales; FOL, foot length; HAL, hand length; HH, head height; HL, head length; HW, head width; IL3, infradigital lamellae of the third finger; IL4, infradigital lamellae of the fourth toe; IS, infralabial scales; LS, lorilabial scales; MS, midbody scales; RH, rostral height; RND, rostral–nasal distance; RUL, radius–ulna length; SCI, scales in contact with interparietal; SS, supralabial scales; TFL, tibia–fibula length; VS, ventral scales.

according to the MANOVA results (see Material and methods; Table 5). A higher number of between-species differences in the morphometric variables were found amongst females of the *L. kingii-archeforus* group relative to males; many fewer differences were found in the meristic data set. Although we found morphometric and/or meristic differences amongst all species within all groups, there were two pairs of species in which no differences were found: between female *L. kingii* and *L. tristis*, and between

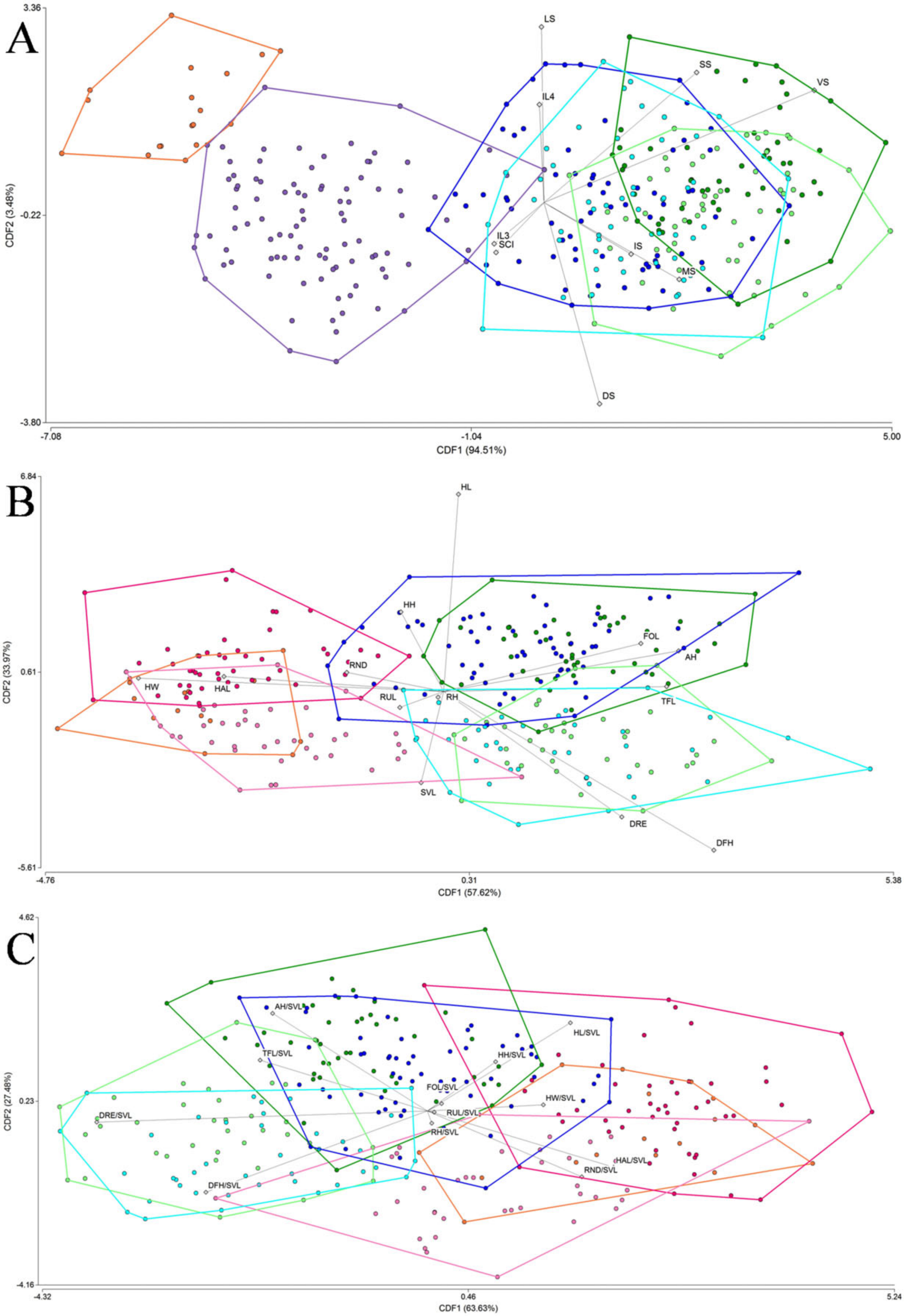

A
3.36
-0.22
-3.80
CDF2 (3.48%)
-7.08
-1.04
5.00
CDF1 (94.51%)
LS
SS
VS
IL4
IL3
SCI
IS
MS
DS
B
6.84
0.61
-5.61
CDF2 (33.97%)
-4.76
0.31
5.38
CDF1 (57.62%)
HL
HH
FOL
AH
RND
HW
HAL
RUL
RH
TFL
SVL
DRE
DFH
C
4.62
0.23
-4.16
CDF2 (27.48%)
-4.32
0.46
5.24
CDF1 (63.63%)
AH/SVL
HL/SVL
TFL/SVL
HH/SVL
FOL/SVL
HW/SVL
DRE/SVL
RUL/SVL
RH/SVL
HAL/SVL
RND/SVL
DFH/SVL

Table 6. Meristic (below diagonal) and morphometric standardized by SVL (above diagonal) characters with statistically significant differences for females of the *Liolaemus kingii-archeforus* group are shown (results from DGC comparisons of ANOVA or Kruskal–Wallis tests)

Females	*Liolaemus archeforus*	*Liolaemus chacabucoense*	*Liolaemus escarchadosi*	*Liolaemus gallardoi*	*Liolaemus sarmientoi*	*Liolaemus scolaroi*	*Liolaemus tari*	*Liolaemus zullyae*	*Liolaemus baguali*	*Liolaemus kingii*	*Liolaemus somuncurae*	*Liolaemus tristis*	*Liolaemus uptoni*
L. archeforus		DFH, HAL	TFL, RUL, HW, HL, RND, DRE	RUL, HAL	RUL, HAL	RUL, HAL	RUL, HAL, HL, RND, DRE	DFH, RUL, HAL, RND	TFL, RUL, HW	DFH, RUL, HAL, AH	RUL, HAL, HL, RND, DRE	DFH, RUL, HAL	TFL,RUL, HW, HL, RND, DRE
L. chacabucoense	–		DFH, TFL, RUL, HAL, HW, HL, RND, DRE	DFH, RUL	DFH, RUL	DFH, RUL	DFH, RUL, HL, RND, DRE	RUL, RND	DFH, TFL, RUL, HW	RUL, AH	DFH, RUL, HL, RND, DRE	RUL	DFH, TFL, RUL, HW, HL, RND, DRE
L. escarchadosi	SS, DS	SS, DS		TFL, HAL, HW, HL, RND, DRE	TFL, HAL, HW, HL, RND, DRE	TFL, HAL, HW, HL, RND	TFL, HAL, HW	DFH, TFL, HAL, HW	HAL, RND	DFH, TFL, HAL, HW, RND, DRE	TFL, HAL, HW	DFH, TFL, HAL, HW, HL, RND, DRE	RUL, HAL
L. gallardoi	SS	SS	DS		AH	–	HL, RND, DRE	DFH, RND	TFL, HAL, HW	DFH, AH	HL, RND, DRE	DFH	TFL, RUL, HAL, HW, HL, RND, DRE, AH
L. sarmientoi	SS, DS, VS	SS, DS, VS	VS	DS, VS		–	HL, RND, DRE	DFH, RND	TFL, HAL, HW	DFH	HL, RND, DRE	DFH	TFL, RUL, HAL, HW, HL, RND, DRE
L. scolaroi	–	–	SS, MS, DS	SS	SS, MS, DS		HL, RND	DFH, RND	TFL, HAL, HW	DFH	HL, RND	DFH	TFL, RUL, HAL, HW, HL, RND
L. tari	SS, DS	SS, DS	–	DS	VS	SS, MS, DS		DFH	TFL, HAL, HW, RND	DFH, RND, DRE, AH	–	DFH, HL, RND, DRE	TFL, RUL, HAL, HW
L. zullyae	SS	SS	DS	–	DS, VS	SS	DS		DFH, TFL, HAL, HW, RND	RND	DFH	RND	DFH, TFL, RUL, HAL
L. baguali	SS	SS	MS, DS	–	MS, DS, VS	SS	MS, DS	–		DFH, TFL, HAL, HW	TFL, HAL, HW, RND	DFH, TFL, HAL, HW	RUL, RND
L. kingii	SS	SS	DS	–	DS, VS	SS	DS	–	–		DFH, RND, DRE	–	DFH, TFL, RUL, HAL, HW, RND, DRE
L. somuncurae	SS, IL4	SS, IL4	MS, DS, IL4	IL4	MS, DS, VS, IL4	SS, IL4	MS, DS, IL4	IL4	IL4	IL4		DFH, HL, RND, DRE	TFL, RUL, HAL, HW
L. tristis	SS	SS	MS, DS	–	MS, DS, VS	SS	MS, DS	–	–	–	IL4		DFH, TFL, RUL, HAL, HW, HL, RND, DRE
L. uptoni	SS, IL4	SS, IL4	DS, IL4	IL4	DS, VS, IL4	SS, IL4	DS, IL4	IL4	IL4	IL4	–	IL4	

Morphometric variable names: SVL, snout–vent length; TL, tail length; DFH, distance between fore and hind limbs; FOL, foot length; TFL, tibia–fibula length; RUL, radius–ulna length; HAL, hand length; HH, head height; HW, head width; HL, head length; RND, rostral–nasal distance; RH, rostral height; DRE, distance from rostral to the eye; AH, auditory meatus height.

Meristic variable names: SCI, scales in contact with the interparietal; LS, lorilabial scales; SS, supralabial scales; IS, infralabial scales; MS, midbody scales; DS, dorsal scales; VS, ventral scales; IL3, infradigital lamellae of the third finger; IL4, infradigital lamellae of the fourth toe.

Table 7. Meristic (below diagonal) and morphometric standardized by SVL (above diagonal) characters with statistically significant differences for males of the *Liolaemus kingii-archeforus* group are shown (results from DGC comparisons of ANOVA or Kruskal–Wallis tests)

Males	*Liolaemus archeforus*	*Liolaemus chacabucoense*	*Liolaemus escarchadosi*	*Liolaemus gallardoi*	*Liolaemus sarmientoi*	*Liolaemus scolaroi*	*Liolaemus tari*	*Liolaemus zullyae*	*Liolaemus baguali*	*Liolaemus kingii*	*Liolaemus somuncurae*	*Liolaemus tristis*	*Liolaemus uptoni*
L. archeforus		–	RUL, HL, DRE, AH	RH	FOL, AH	HH	HW, HL, DRE	HL, RND	HH, HL, AH	DFH, FOL, HL, AH	FOL, HL, DRE	–	FOL, RUL, HH, HL, RND, DRE, AH
L. chacabucoense	–		RUL, HL, DRE	FOL, RUL, RH	AH	HH	RUL, HW, HL, DRE	DFH, RUL, HW, HL, RND, DRE	HH, HL	RUL, HL, AH	DFH, RUL, HL, DRE	–	RUL, HH, HL, RND, DRE, AH
L. escarchadosi	MS, DS, IL3	MS, DS, IL3		HW, HL, RH, DRE, AH	RUL, HL, DRE	RUL, HH	–	RUL, RND	RUL, HH	RUL, DRE	RUL	HL, DRE	HH
L. gallardoi	SS	SS	SS, MS,DS, IL3, IL4		TL, FOL, RH, DRE, AH	TL, HH, RH	FOL, HW, HL, RH, DRE	HL, RND, RH	HH, HL, RH	FOL, HL, RH, AH	TL, FOL, HL, RH, DRE	RH	FOL, HH, HL, RND, RH, DRE, AH
L. sarmientoi	SS, MS, DS	SS, MS, DS	SS	MS, DS		HH, RND, DRE	HW, HL, RND, DRE	TL, HL, RND, DRE	HH, HL, DRE	HL	HL, RND, DRE, AH	–	RUL, HH, HL, RND, DRE
L. scolaroi	–	–	MS, DS	SS	SS, DS		HH, HW, HL	HH, HW	–	HH	HH	HH, RND	RUL, HH, HL, DRE
L. tari	DS	MS, DS	LS	SS, MS, DS, IL4	LS, SS	DS		–	HH, HW	HW, DRE, AH	TL, HW	HW, RND, DRE	HH
L. zullyae	–	MS	MS, DS, IL3	SS	SS, MS, DS	IL3	MS, DS, IL3		HH, RND	DFH, HW, RND, DRE, AH	TL, FOL	RND, DRE	DFH, FOL, HH
L. baguali	SS, MS, VS, IL3	SS, MS, VS, IL3	LS, SS, MS, DS, VS, IL3, IL4	VS, IL3	LS, MS, DS, VS, IL3, IL4	SS, MS, VS, IL3	SS, MS, DS, VS, IL3, IL4	SS, VS		DFH, HH, DRE	HH	HH	HH
L. kingii	LS, SS, VS	SS, VS	LS, SS, MS, DS, VS, IL3	VS	LS, MS, DS, VS	SS, VS	SS, MS, DS, VS, IL3	SS, VS	IL3		DFH, DRE, AH	AH	HH, HL, RND, DRE
L. somuncurae	LS, SS, MS, VS, IL4	SS, MS, VS, IL4	LS, SS, MS, DS, VS, IL3, IL4	MS, VS	LS, MS, DS, VS, IL3, IL4	SS, MS, VS, IL3, IL4	SS, MS, DS, VS, IL3, IL4	SS, MS, VS, IL4	VS	MS, VS, IL4		HL, RND, DRE	DFH, HH
L. tristis	SS, VS	SS, VS	SS, MS, DS, VS, IL3, IL4	VS	MS, DS, VS, IL4	SS, VS, IL3, IL4	SS, MS, DS, VS, IL3, IL4	SS, VS	–	–	MS, VS		HH, HL, RND, DRE
L. uptoni	IS, VS	IS, VS	IS, MS, DS, VS, IL3, IL4	SS, IS, VS	SS, IS, DS, VS, IL4	IS, VS, IL3, IL4	IS, DS, VS, IL3, IL4	IS, VS	SS, IS, MS	SS, IS	SS, IS, MS, VS	SS, IS	

Morphometric variable names: SVL, snout–vent length; TL, tail length; DFH, distance between fore and hind limbs; FOL, foot length; TFL, tibia–fibula length; RUL, radius–ulna length; HAL, hand length; HH, head height; HW, head width; HL, head length; RND, rostral–nasal distance; RH, rostral height; DRE, distance from rostral to the eye; AH, auditory meatus height.

Meristic variable names: SCI, scales in contact with the interparietal; LS, lorilabial scales; SS, supralabial scales; IS, infralabial scales; MS, midbody scales; DS, dorsal scales; VS, ventral scales; IL3, infradigital lamellae of the third finger; IL4, infradigital lamellae of the fourth toe.

Table 8. Meristic (below diagonal) and morphometric standardized by SVL (above diagonal) characters with statistically significant differences for the females and males of the *Liolaemus lineomaculatus* group are shown (results from DGC comparisons of ANOVA or Kruskal–Wallis tests). Differences in morphometric characters when exclusive to females are underlined and when exclusive to ***males*** are in bold and italics

Females & males	*Liolaemus avilae*	*Liolaemus hatcheri*	*Liolaemus kolengh*	*Liolaemus lineomaculatus*	*Liolaemus morandae*	*Liolaemus silvanae*
L. avilae		TL, FOL, TFL, HH, ***HL***	TL, HAL, HW, RH, DRE, AH, ***HH***, ***HL***	HH, ***FOL***, ***HL***	HH, TFL, RH, ***HL***, ***RH***	TL, HAL, HH, RND, ***FOL***, ***HL***, ***DRE***
L. hatcheri	SCI, SS, IS, DS, VS, IL3, IL4		TFL, HAL, RH, TL, FOL, HH, HW, HL, DRE, AH	TL, TFL, HH, FOL, HL	TL, FOL, HH, HL, RH, ***TFL***, ***AH***	TFL, HAL, RND, FOL, ***HH***, ***HL***, ***DRE***
L. kolengh	SCI, SS, IS, DS, VS, IL3, IL4	–		TL, HAL, HH, HW, AH, RH, DRE	TL, HAL, HH, TFL, HW, DRE, AH, ***FOL***, ***HL***, ***RH***	HH, HW, HL, RND, RH, DRE, AH
L. lineomaculatus	SS, MS, DS, VS	IS, MS, DS, VS, IL3, IL4	IS, MS, DS, VS, IL3, IL4		TFL, RH, ***FOL***, ***HH***, ***HL***, ***DRE***, ***AH***	TL, HAL, HH, HL, RND, ***HW***
L. morandae	SCI, SS, IS, MS, IL3	MS, DS, VS, IL4	MS, DS, VS, IL4	IS, DS, VS, IL3		TL, HAL, HH, HL, RND, RH, TFL, ***FOL***, ***DRE***, ***AH***
L. silvanae	SS, MS, DS, VS	MS, DS, VS, IL3, IL4	MS, DS, VS, IL3, IL4	VS	IL3	

Morphometric variable names: SVL, snout–vent length; TL, tail length; DFH, distance between fore and hind limbs; FOL, foot length; TFL, tibia–fibula length; RUL, radius–ulna length; HAL, hand length; HH, head height; HW, head width; HL, head length; RND, rostral–nasal distance; RH, rostral height; DRE, distance from rostral to the eye; AH, auditory meatus height.

Meristic variable names: SCI, scales in contact with the interparietal; LS, lorilabial scales; SS, supralabial scales; IS, infralabial scales; MS, midbody scales; DS, dorsal scales; VS, ventral scales; IL3, infradigital lamellae of the third finger; IL4, infradigital lamellae of the fourth toe.

Table 9. Meristic (below diagonal) and morphological (above diagonal) characters with statistically significant differences for females and males of the *Liolaemus magellanicus* group are shown (results from DGC comparisons of ANOVA or Kruskal–Wallis tests)

Females & males	*Liolaemus caparensis*	*Liolaemus magellanicus*
L. caparensis		TFL, RUL
L. magellanicus	DS, VS, IL3, IL4	

Morphometric variable names: TFL, tibia–fibula length; RUL, radius–ulna length.
Meristic variable names: DS, dorsal scales; VS, ventral scales; IL3, infradigital lamellae of the third finger; IL4, infradigital lamellae of the fourth toe.

male *L. chacabucoense* and *L. archeforus*, but in both cases differences were found in coloration patterns (Table 3).

DISCUSSION

The morphological classification of the species included in the *L. lineomaculatus* section was proposed several decades ago, and although it is currently in use (Cei & Scolaro, 1982a, 1983; Scolaro & Cei, 1997; Núñez & Scolaro, 2009; Minoli, Kozykariski & Avila, 2010; Fontanella *et al*., 2012), it has never been properly revised until now. In this paper we have summarized the characters that were proposed to diagnose three morphological groups within the *L. lineomaculatus* section (*L. kingii*, *L. archeforus*, and *L. lineomaculatus*), and evaluated the morphological variation in two species (*L. magellanicus* and *L. caparensis*) that were not clearly assigned to any of these three morphological groups, but were included in an independent clade with molecular data known as the *L. magellanicus* group (Etheridge, 1995; Breitman *et al*., 2011a). We have shown that the traditional practice of classifying 11 species in two (*L. kingii* and *L. archeforus*) of the three traditional morphological groups of the section, which is not supported by molecular data, is also not supported by morphological data and therefore should be abandoned. We also documented some interesting patterns of sexual dimorphism within each group, and discussed these in an ecological and evolutionary context.

LIOLAEMUS LINEOMACULATUS SECTION: PAST

Lizards from the *L. lineomaculatus* section have been used for testing evolutionary hypotheses about past demographic changes and speciation patterns (Breitman *et al*., 2011a, 2012); moreover, ecological and physiological questions have also been addressed for some species of this section (Ibargüengoytía *et al*., 2010; Bonino *et al*., 2011; Fernández *et al*., 2011). Refugia and phylogeographical breaks have been proposed for Patagonia based on the molecular study of these lizards (Breitman *et al*., 2012), some of which are geographically concordant with those identified in other lizard clades, rodents, flowering plants, and trees (Sérsic *et al*., 2011).

Two lines of evidence have been used to evaluate the species arrangement within the *L. lineomaculatus* section, a traditional one based on general morphological similarities (Cei & Scolaro, 1982b, 1983), and another one based on molecular markers analysed using phylogenetic methods (Espinoza *et al*., 2004; Schulte & Moreno-Roark, 2010; Breitman *et al*., 2011a). Both sources of evidence have shown congruence as well as incongruence, and since the last extension of the 'morphological arrangement hypothesis' eight new species have been described (Cei & Scolaro, 1996; Pincheira-Donoso & Nuñez, 2005; Abdala & Lobo, 2006; Scolaro & Cei, 2006; Núñez & Scolaro, 2009; Breitman *et al*., 2011b, c), but there has been neither a revision of the morphological hypothesis nor a comparison with the molecular one. Morphological as well as molecular evidence supported the *L. lineomaculatus* group (Etheridge, 1995; Espinoza *et al*., 2004; Schulte & Moreno-Roark, 2010; Breitman *et al*., 2011a), and the 'morphological arrangement hypothesis' (but not the molecular hypothesis) supported the recognition of the *L. kingii* and *L. archeforus* groups as distinct groups (Cei, 1979; Cei & Scolaro, 1982a, 1983; Laurent, 1983, 1985; Scolaro & Cei, 1997; Pincheira-Donoso & Núñez, 2005). The species *L. magellanicus* was hypothesized to be closely related to *L. lineomaculatus* on the basis of morphological similarities, but in the first molecular phylogenetic study of this section (Breitman *et al*., 2011a, c), *L. magellanicus* and *L. caparensis* were recovered in a strongly supported clade identified as the *L. magellanicus* group.

LIOLAEMUS LINEOMACULATUS SECTION: PRESENT

The *L. lineomaculatus* section is composed of 21 species distributed over a large area in Patagonia. In this paper, we have presented several classes of statistical analyses of morphological data and our results are concordant with the molecular evidence in recognizing three groups within the *L. lineomaculatus* section: the *L. lineomaculatus*, *L. magellanicus*, and *L. kingii* groups. The *L. kingii* group (referred to as the *L. kingii-archeforus* group in the Material and methods and Results sections of this paper) includes all the species that were previously recognized as two separate morphological groups (*L. kingii* and *L. archeforus*); as all the characters that had been previously considered diagnostic under the 'morphological arrangement hypothesis' for each group failed to clearly distinguish between them, we discourage the recognition of the *L. kingii* and *L. archeforus* groups as two differentiated entities and we consider all their 11 species to be included in one group called the *L. kingii* group (because this was the first described species from the group). Morphological characters do support differentiation of the *L. magellanicus* group, recently proposed on the basis of molecular data (Breitman *et al*., 2011a).

Molecular data suggested that the divergence between the *L. lineomaculatus* section and its sister clade (*L. montanus* section) occurred at the Middle Miocene (14.36 Mya; 95% HPD = 10.25–18.64), the *L. lineomaculatus* group differentiated from the (*L. magellanicus*, *L. kingii*) clade around the Late Miocene (8.46 Mya; 95% HPD = 6.26–10.84), and the *L. kingii* group diverged from the *L. magellanicus* group around the Late Miocene/Early Pliocene (5.87 Mya; 95% HPD = 4.26–7.62) (Breitman *et al*., 2011a).

The L. lineomaculatus group

The *L. lineomaculatus* group includes six species: *L. avilae*, *L. hatcheri*, *L. kolengh*, *L. lineomaculatus*, *L. morandae*, and *L. silvanae*. The distribution of these species extends from central Neuquén (Christie, 2002) to south of Santa Cruz province, with some species widespread and others geographically restricted. The group and the morphological characters that define it were established by Etheridge (1995): absence of precloacal pores and presence of dorsal tridentate (or trifid) scales. Molecular support for this group is based on mitochondrial (Espinoza *et al*., 2004; Schulte & Moreno-Roark, 2010) and nuclear genes, both analysed using standard concatenation as well as a species tree approach (Breitman *et al*., 2011a).

This group differs from the *L. magellanicus* and the *L. kingii* groups in the absence of precloacal pores and the presence of trifid scales (individuals of *L. avilae*, *L. morandae*, and *L. lineomaculatus* present a lower percentage of trifid scales relative to *L. hatcheri*, *L. kolengh*, and *L. silvanae*), a characteristic that was previously described in the literature (Etheridge, 1995). Additionally, the number of ventral scales (61–94 *L. lineomaculatus*, 49–72 *L. magellanicus*, 78–113 *L. kingii*) and midbody scales (43–65 *L. lineomaculatus*, 36–46 *L. magellanicus*, 55–93 *L. kingii*) is intermediate for the *L. lineomaculatus* group compared with the *L. magellanicus* and *L. kingii* groups (with some degree of overlap). The *L. lineomaculatus* group also has an intermediate body size in agreement with the meristic variables. A disparate coloration pattern relative to the *L. kingii* group was also observed. Whereas species of the *L. lineomaculatus* group are characterized by two paravertebral and quadrangular black or brown series of blotches surrounded by two well-defined whitish lines (in general, to the tip of the tail), species of the *L. kingii* group do not show this pattern and present transversal lines or a wide vertebral line (Fig. 1). Sexual dimorphism is not evident in the meristic characters, but it is in the morphometric characters within the species included in the *L. lineomaculatus* group, with males having bigger heads and females having longer bodies.

The L. magellanicus group

The *L. magellanicus* group includes *L. magellanicus* and *L. caparensis*, which have the southernmost distributions of the *L. lineomaculatus* section; with *L. caparensis* only known from its type locality (Breitman *et al*., 2011c), whereas *L. magellanicus* is widespread south of the Santa Cruz river and is the only species of *Liolaemus* inhabiting Tierra del Fuego Island (Bottari, 1975).

The *L. magellanicus* group is a well-differentiated clade in both molecular and morphological characters. This two-species group has the lowest number of ventral and midbody scales of the *L. lineomaculatus* section. Furthermore, both species possess precloacal pores but these are fewer in number relative to the *L. kingii* group, and are strongly differentiated from the *L. kingii* group in both the dorsal and ventral patterns. Sexual dimorphism is not present in either meristic or morphometric characters within this group.

The L. kingii group

With this morphological review, we set up a 'new' starting point for the species of this group because the traditional differentiation into two groups (*L. kingii* and *L. archeforus*) that was not supported by molecular data (Espinoza *et al*., 2004; Schulte & Moreno-Roark, 2010; Breitman *et al*., 2011a, c) is also not supported by the extensive morphological data presented here. Thus, we strongly recommend using the group name *L. kingii* to refer to the group formed by: *L. archeforus*, *L. baguali*, *L. chacabucoense*, *L. escarchadosi*, *L. gallardoi*, *L. kingii*, *L. sarmientoi*, *L. scolaroi*, *L. somuncurae*, *L. tari*, *L. tristis*, *L. uptoni*, and *L. zullyae*. Some of these species have relatively large distributions (e.g. *L. escarchadosi*, *L. gallardoi*, *L. kingii*, and *L. sarmientoi*), whereas others have more restricted ones (e.g. *L. somuncurae*, *L. tari*, *L. tristis*, and *L. uptoni*).

The *L. kingii* group is differentiated from the *L. lineomaculatus* and *L. magellanicus* groups based on molecular and morphological evidence, as described above. Species within the *L. kingii* group are the largest and present the highest number of scale counts amongst the groups of the *L. lineomaculatus* section. They also present a different coloration pattern characterized by the presence of transversal bands (complete, broken, or indistinct), but never showing the characteristic dorsal pattern of the *L. lineomaculatus* and *L. magellanicus* groups (two paravertebral and quadrangular series of black or brown blotches surrounded by two well-defined, whitish lines). Sexual dimorphism is evident in the meristic as well as in the morphometric characters in the species included in this group.

SEXUAL DIMORPHISM

Beyond the immediate implications of this study, we found some interesting patterns of sexual dimorphism within each group. In the *L. magellanicus* group sexual dimorphism is not found in either meristic or morphometric variables, whereas in the *L. lineomaculatus* group it is present only in the morphometric data set, and in the *L. kingii* group it is present in both meristic and morphometric data sets.

In the *L. kingii* and *L. lineomaculatus* groups, the same characters explained the morphometric differences between males and females; we found that males possess longer and wider heads than females, and females show thinner snouts (measured as the distance from the eye to rostral scale). Sexual differences in shape and size have been widely studied in animals and in lizards specifically (Selander, 1966; Schoener, 1967; Anderson & Vitt, 1990), and two principal causes are mentioned in the literature to explain them. The first one is sexual selection, in which a trait is selected because it confers an advantage for intrasexual competition or mate choice. The other explanation is ecological niche divergence: when resources are scarce species may partition the niche in order to avoid competition and thus natural selection promotes phenotypic divergence (Selander, 1966; Schoener, 1967; Anderson & Vitt, 1990). The different causes of sexual dimorphism in head size were recently studied in 19 species of *Liolaemus* (including two from the *L. lineomaculatus* group and five from the *L. kingii* group) and different sex-dependent mechanisms promoting the divergence in head size were reported, suggesting that male and female *Liolaemus* are subject to different selective pressures (Vanhooydonck *et al*., 2010). For males, sexual selection seems to be operating on bite-force performance, which favours increased head size, whereas for females differentiation in head size is being promoted by natural selection for prey capture (Vanhooydonck *et al*., 2010). We did not find head-size sexual dimorphism in the *L. magellanicus* group, suggesting that either sexual or natural selection mechanisms are not acting on these traits. One possible explanation is that because the species *L. magellanicus* inhabits suboptimal thermal environments (Bonino *et al*., 2011; Fernández *et al*., 2011), selection pressures may operate more strongly on traits related to surviving in cold environments. Interestingly, in Northern Hemisphere lizards, all lineages that occur in areas with seasonal colder temperatures are reported to be monomorphic (Angilletta, Oufiero & Leaché, 2006; Corl *et al*., 2009).

Females from the *L. lineomaculatus* and *L. kingii* groups have larger body sizes than males. This characteristic has also been observed in other *Liolaemus* species (e.g. Verrastro, 2004) as well as in other lizard genera (e.g. Butler, 2007). Larger female body sizes are generally associated with larger clutch sizes or individual egg/embryo sizes (Vitt & Cooper, 1985; Olsson *et al*., 2002), thereby resulting in higher reproductive success.

Sexual dimorphism was also observed in the meristic data but only for the *L. kingii* group, in which males are characterized by a higher number of lorilabial and supralabial scales and a lower number of dorsal scales relative to females; these results are concordant with the morphometric data showing males with bigger heads and females with larger body sizes. Abundant evidence has been presented for the invariance of scale number with respect to the age (thus, size) in lizards; thus, these meristic results indicate that further study needs to be conducted within the *L. kingii* group to understand the differential selective pressures on body size.

The topic of sexual dimorphism is complex and interesting, and traditional as well as newly available methods offer a wide set of tools for testing these first round of hypotheses. We included this section on sexual dimorphism in our paper to highlight some interesting observations with the aim of encouraging more detailed studies on these emerging patterns within the *L. lineomaculatus* section. We foresee many future and interesting studies in the behavioural, evolutionary, and physiological ecology of these lizards.

CONCLUSION

In this study, we found no evidence to support the formerly recognized *L. kingii* and *L. archeforus* species groups within the *L. lineomaculatus* section. Our review and analyses provide evidence that species within both of these groups should be considered as a single group called the *L. kingii* group, which is clearly differentiated from the *L. lineomaculatus* and *L. magellanicus* groups. We are tentatively more confident in this conclusion than the previous groupings because the morphological differentiation of this *L. kingii* group is also supported by the current molecular phylogenetic hypothesis for the section. Finally, we have briefly discussed the sexual dimorphism present in these lizards in order to provide a starting point for future research. We hope that, through this contribution, we have provided a strong foundation for future research on *Liolaemus*.

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APPENDIX 1

Species with locality numbers, geographical coordinates, and voucher numbers used in this study. All individuals are catalogued in the Centro Nacional Patagónico Herpetological collection (LJAMM-CNP), Puerto Madryn, Chubut, Argentina; except for 2626–2628, which are catalogued in the La Plata National Museum (MLP.S), Buenos Aires, Argentina.

Locality	Species	Voucher numbers	Latitude	Longitude
1	*Liolaemus archeforus*	9238–9240; 9270–9271; 9320; 9244–9249	–46.96439	–71.10756
2	*Liolaemus chacabucoense*	7375–7384	–47.16475	–71.83925
3	*L. chacabucoense*	7364–7369	–47.22497	–71.76978
4	*L. chacabucoense*	13048–13050	–47.19706	–71.58583
5	*L. chacabucoense*	7371–7372	–47.11822	–71.84314
6	*Liolaemus escarchadosi*	9286; 9335–9346	–49.77133	–70.72997
7	*Liolaemus gallardoi*	9315; 9440–9467; 9469–9476; 9478–9479; 9481–9482	–47.99372	–71.68042
8	*Liolaemus sarmientoi*	7197–7200; 7204–7208; 7211–7212	–52.07472	–69.58128
9	*Liolaemus scolaroi*	13033–13034	–46.81286	–71.97822
10	*L. scolaroi*	7392–7395	–46.84628	–71.87125
11	*Liolaemus tari*	9317; 9400–9410	–49.56972	–72.04775
10	*Liolaemus zullyae*	7385–7391; 7371–7372	–46.84628	–71.87125
9	*L. zullyae*	13032	–46.81286	–71.97822
12	*Liolaemus baguali*	7231–7233; 7258–7259; 9394–9397	–49.41025	–71.49953
13	*L. baguali*	7266–7275; 7338–7339	–49.23042	–71.34203
14	*Liolaemus kingii*	7457–7467; 9713–9717; 9721–9725; 9766–9770; 9774–9776	–47.71697	–65.84108
15	*Liolaemus somuncurae*	6571; 6764–6767; 6769–6770; 6835–6868; 6908–6914	–41.39467	–66.95925
16	*Liolaemus tristis*	9618–9623; 9439; 9593–9611; 9613, 9615–9616	–46.98261	–69.79992
17	*Liolaemus uptoni*	8426; 10943–10952	–42.39181	–68.93336
18	*Liolaemus avilae*	2627; 9250–9253; 9274–9276; 9399	–47.09139	–71.02025
19	*Liolaemus hatcheri*	9485–9492; 9498–9506; 10321–10323	–47.99372	–71.68042
20	*Liolaemus kolengh*	7276–7282; 7284; 7289–7290; 7294–7304; 7306–7307; 7309–7315; 10590	–47.02106	–71.80883
21	*Liolaemus lineomaculatus*	7470–7473; 9750–9756	–47.71697	–65.84108
22	*Liolaemus morandae*	2626; 13020	–45.68628	–67.89719
23	*L. morandae*	10201–10202	–45.96669	–68.19967
24	*L. morandae*	9677–9679	–45.62872	–67.68433
25	*Liolaemus silvanae*	9218–9233; 10320	–46.96439	–71.10756
26	*Liolaemus caparensis*	2628; 9379–9380; 9382–9388	–49.56972	–72.04775
27	*Liolaemus magellanicus*	6722–6731	–52.25143	–68.43116

APPENDIX 2

Dorsal pattern (including vertebral, paravertebral, and dorsal stripe pattern), variegation, and melanism (expressed in percentage whiting each species). Dorsal stripe pattern: A, complete or slightly broken bands; B, dotted bands; C, irregular bands; D, indistinct or almost indistinct bands; these variables were illustrated, and respectively described as 0–20, 40, 60, and 80–100 by Scolaro (1987). Ventral melanism: m0, no melanism; m1, melanism only present in gular zone; m2, melanism only present on belly; m3, melanism present on all body regions except the cloacal region and limbs; m4, melanism present on all of body except for limbs; m5, melanism present on all of body. F, females; M, males; N, no pattern/coloration; Y, pattern/coloration present.

	Dorsal stripe pattern (%)		Vertebral pattern (%)		Paravertebral pattern (%)		Dorsolateral pattern (%)		Variegation (%)		Melanism (%)	
Species	F	M	F	M	F	M	F	M	F	M	F	M
Liolaemus baguali	75 A; 25 B	50 A; 50 B	100 N	60 N; 40 Y	80 N; 20 Y	100 N	100 N	100 N	75	75	25 m0; 25 m3; 50 m5	25 m3; 25 m5; 50 m4
Liolaemus kingii	100 B	50 A; 50 B	25 N; 75 Y	50 N; 50 Y	100 N	100 N	100 N	100 N	100	100	100 m0	75 m0; 25 m2
Liolaemus somuncurae	75 A; 25 D	50 A; 50 D	60 N; 40 Y	100 N	100 N	100 N	100 N	100 N	75	100	25 m2; 75 m3	50 m2; 50 m3
Liolaemus tristis	50 B; 50 D	25 B; 25 C; 50 D	60 N; 40 Y	100 N	60 N; 40 Y	100 N	75 N; 25 Y	100 N	100	100	50 m0; 50 m2	50 m0; 50 m2
Liolaemus uptoni	100 A	50 A; 50 D	100 Y	50 N; 50 Y	75 N; 25 Y	100 N	100 N	100 N	50	50	100 m0	75 m0; 25 m3
Liolaemus archeforus	33 B; 33 C; 33 D	12.5 A; 12.5 B; 75 D	100 N	100 N	100 N	100 N	100 N	100 N	100	50	75 m0; 25 m1	25 m0; 25 m3; 25 m4; 25 m5
Liolaemus chacabucoense	50 C; 50 D	10 A; 50 B; 40 C	40 N; 60 Y	50 N; 50 Y	20 N; 80 Y	100 N	75 N; 25 Y	100 N	25	50	25 m0; 50 m3; 25 m5	25 m0; 25 m2; 25 m4; 25 m5
Liolaemus escarchadosi	25 A; 75 B	25 A; 25 B; 25 C; 25 D	25 N; 75 Y	75 N; 25 Y	25 N; 75 Y	25 N; 75 Y	100 N	100 N	100	100	75 m2; 25 m0	25 m3; 75 m4
Liolaemus gallardoi	25 B; 50 C; 25 D	25 C; 75 D	75 N; 25 Y	100 N	100 N	100 N	100 N	100 N	100	100	50 m0; 50 m2	25 m0; 75 m2
Liolaemus sarmientoi	100 D	100 D	75 N; 25 Y	50 N; 50 Y	100 N	100 N	100 N	100 N	100	100	50 m2; 25 m3; 25 m4	25 m2; 75 m4
Liolaemus scolaroi	100 C	25 B; 50 C; 25 D	100 Y	100 Y	100 Y	100 Y	100 N	100 N	100	100	100 m0	100 m0
Liolaemus tari	25 A; 25 B; 25 C; 25 D	12.5 A; 12.5 C; 75 D	75 N; 25 Y	100 N	100 Y	40 N; 60 Y	100 N	100 N	100	100	25 m0; 75 m2	100 m0
Liolaemus zullyae	100 C	100 D	100 N	75 N; 25 Y	25 N; 75 Y	100 N	100 N	50 N; 50 Y	100	100	100 m0	75 m0; 25 m3
Liolaemus avilae	–	–	100 N	100 N	100 Y	100 Y	25 N; 75 Y	25 N; 75 Y	100	100	100 m0	75 m0; 25 m3
Liolaemus hatcheri	–	–	100 N	100 N	100 Y	100 Y	25 N; 75 Y	50 N; 50 Y	100	100	25 m0; 75 m2	50 m2; 25 m4; 25 m5
Liolaemus kolengh	–	–	100 N	100 N	100 Y	100 Y	50 N; 50 Y	25 N; 75 Y	100	100	75 m2; 25 m4	25 m4; 75 m5
Liolaemus lineomaculatus	–	–	25 N; 75 Y	50 N; 50 Y	100 Y	100 Y	100 Y	100 Y	100	100	75 m0; 25 m1	100 m0
Liolaemus morandae	–	–	75 N; 25 Y	100 N	100 Y	100 Y	100 Y	100 Y	100	100	75 m0; 25 m2	100 m0
Liolaemus silvanae	–	–	100 N	100 N	80 N; 20 Y	100 N	100 N	100 N	0	0	100 m5	100 m5
Liolaemus caparensis	–	–	60 N; 50 Y	100 N	100 Y	100 Y	100 Y	100 Y	75	75	25 m0; 25 m2; 25 m3; 25 m4	25 m0; 75 m2
Liolaemus magellanicus	–	–	50 N; 50 Y	40 N; 60 Y	100 Y	100 Y	100 Y	25 N; 75 Y	75	75	50 m0; 50 m2	50 m0; 50 m2

APPENDIX 3

Number of midbody scales for each morphological group. *N*, sample size; mean ± SD (min.–max.) are shown for females, males, and the whole sample; Student's *t*-test or Kruskal–Wallis (when assumptions were rejected: nonparametric) *P*-values and statistics are shown. Assumptions to perform a parametric test (Student's *t*) are normality (*p*-SW, Shapiro–Wilks test) and variance homogeneity (*p*-HomVar, Levene test); if those tests were rejected ($P > 0.05$) then a nonparametric test was performed.

Group	*N*	Females	Males	All	Statistic	*p*-*t*-test/ KW	*p*-HomVar	*p*-SW
Liolaemus archeforus	124	69.89 ± 5.52 (60–83)	70.03 ± 6.73 (55–84)	69.97 ± 6.21 (55–84)	–0.12	0.90	0.13	0.90
Liolaemus kingii	97	76.13 ± 5.49 (64–86)	75.27 ± 5.39 (65–93)	75.72 ± 5.43 (64–93)	0.81	0.42	0.89	0.44
Liolaemus lineomaculatus	105	54.70 ± 5.48 (43–64)	53.67 ± 5.86 (44–65)	54.17 ± 5.67 (43–65)	1.03	0.31	Nonparametric	
Liolaemus magellanicus	11	44.91 ± 3.05 (36–46)	41.78 ± 1.92 (39–44)	41.85 ± 2.54 (36–46)	0.11	0.91	0.15	0.51

APPENDIX 4

Forelimb length (calculated as radius–ulna length + hand length, in millimetres) for each species and morphological group. Mean ± SD (min.–max.) are shown for females, males, and the whole sample; Student's *t* test or Kruskal–Wallis (when assumptions were rejected; nonparametric) *P*-values and statistics are shown. Assumptions to perform a parametric test (Student's *t*) are normality (*p*-SW, Shapiro–Wilks test) and variance homogeneity (*p*-HomVar, Levene test); if those tests were rejected ($P > 0.05$) a nonparametric test was performed. Significant values are in italics and bold. Not eval., *N* F = 1 denotes that female sample size was one and thus the test was not performed.

Species	Females	Males	All	Statistic	*p*-t-test/KW	*p*-HomVar	*p*-SW
Liolaemus archeforus	17 ± 1.77 (15.41–18.91)	17.89 ± 1.88 (14.8–21.41)	17.65 ± 1.81 (14.8–21.41)	–0.71	0.50	0.90	0.9538
Liolaemus chacabucoense	14.85 ± 0.7 (14.06–15.66)	17.6 ± 1.26 (15.89–19.63)	16.5 ± 1.74 (14.06–19.63)	–4.83	***0.00***	0.21	0.8131
Liolaemus escarchadosi	18.8 ± 0.48 (18.2–19.34)	20.13 ± 0.68 (19.24–20.85)	19.54 ± 0.9 (18.2–20.85)	–3.29	***0.01***	0.58	0.537
Liolaemus gallardoi	17.86 ± 0.57 (17–19.05)	19.69 ± 1.19 (16.67–22.06)	18.83 ± 1.32 (16.67–22.06)	17.17	***<0.0001***	Nonparametric	
Liolaemus sarmientoi	17.72 ± 0.43 (17.3–18.21)	19.92 ± 0.43 (19.16–20.42)	19.12 ± 1.18 (17.3–20.42)	–8.16	***<0.0001***	0.89	0.4935
Liolaemus scolaroi	14.72 ± 0 (14.72–14.72)	16.1 ± 1.19 (14.88–17.34)	15.82 ± 1.2 (14.72–17.34)		Not eval., *N* F = 1		0.6729
Liolaemus tari	20.27 ± 1.73 (17.6–21.83)	23.09 ± 2.09 (19.55–24.65)	21.68 ± 2.34 (17.6–24.65)	3.94	0.06	Nonparametric	
Liolaemus zullyae	15.58 ± 0 (15.58–15.58)	18.29 ± 1.12 (16.48–19.65)	17.95 ± 1.41 (15.58–19.65)		Not eval., *N* F = 1		0.24
Liolaemus baguali	19.46 ± 1.32 (17.46–21.16)	21.51 ± 1.04 (20.53–23.3)	20.48 ± 1.56 (17.46–23.3)	–2.99	***0.01***	0.62	0.6967
Liolaemus kingii	16.93 ± 1.02 (15.04–18.24)	18.83 ± 1.11 (16.83–20.23)	18.04 ± 1.42 (15.04–20.23)	9.81	***0.00***	Nonparametric	
Liolaemus somuncurae	18.86 ± 1.57 (16.28–20.76)	21.1 ± 0.98 (19.01–22.15)	20.26 ± 1.63 (16.28–22.15)	–3.56	***0.00***	0.21	0.56
Liolaemus tristis	16.05 ± 0.66 (14.79–17.23)	18.98 ± 1.4 (16.6–21.29)	17.66 ± 1.86 (14.79–21.29)	13.58	***0.00***	Nonparametric	
Liolaemus uptoni	17.99 ± 0.72 (17.03–18.79)	19.59 ± 1.8 (16.76–21.43)	18.95 ± 1.63 (16.76–21.43)	–1.67	0.13	0.17	0.6549
Liolaemus avilae	12.99 ± 0.7 (12.22–13.83)	13.77 ± 0.91 (12.16–14.29)	13.42 ± 0.87 (12.16–14.29)	–1.40	0.20	0.78	0.1962
Liolaemus hatcheri	14.85 ± 0.33 (14.41–15.26)	15.96 ± 0.87 (14.7–17.01)	15.59 ± 0.91 (14.41–17.01)	5.93	***0.01***	Nonparametric	
Liolaemus kolengh	14.67 ± 0.89 (12.91–15.8)	16.51 ± 0.55 (15.75–17.7)	15.66 ± 1.17 (12.91–17.7)	–6.42	***<0.0001***	0.11	0.71
Liolaemus lineomaculatus	13.26 ± 0.44 (12.89–13.88)	14.97 ± 0.45 (14.31–15.51)	14.29 ± 0.98 (12.89–15.51)	–5.94	***0.00***	0.96	0.5408
Liolaemus morandae	12.73 ± 0.95 (11.38–13.57)	13.98 ± 0.97 (13.29–14.66)	13.15 ± 1.07 (11.38–14.66)	–1.51	***0.21***	0.76	0.392
Liolaemus silvanae	19.37 ± 1.31 (17.64–21.88)	20.44 ± 1.15 (18.78–21.98)	19.94 ± 1.31 (17.64–21.98)	–1.79	0.09	0.71	0.63
Liolaemus caparensis	12.63 ± 0.75 (11.83–13.73)	14.04 ± 0.5 (13.46–14.36)	13.16 ± 0.96 (11.83–14.36)	–2.85	***0.03***	0.67	0.5933
Liolaemus magellanicus	13.4 ± 1.36 (11.4–14.31)	14.68 ± 0.7 (13.89–15.63)	14.17 ± 1.15 (11.4–15.63)	–1.99	***0.08***	0.19	0.2346
L. archeforus group	17.58 ± 1.83 (14.06–21.83)	19.10 ± 2.07 (14.80–24.65)	18.51 ± 2.11 (14.06–24.65)	–3.75	***0.00***	0.43	0.21
L. kingii group	17.59 ± 1.65 (14.79–21.16)	19.79 ± 1.62 (16.6–23.3)	18.85 ± 1.96 (14.79–23.3)	–6.03	***<0.0001***	0.91	0.16
L. lineomaculatus group	14.99 ± 2.44 (11.38–21.88)	16.32 ± 2.2 (12.16–21.98)	15.74 ± 2.39 (11.38–21.98)	12.67	***0.00***	Nonparametric	
L. magellanicus group	12.63 ± 0.75 (11.83–13.73)	14.04 ± 0.5 (13.46–14.36)	13.16 ± 0.96 (11.83–14.36)	–2.85	***0.03***	0.67	0.44

APPENDIX 5

Meristic variables for each species, discriminated by sex. Mean ± SD (min.–max.) are shown; Student's t test or Kruskal–Wallis (when assumptions were rejected; nonparametric) P-values and statistics are shown. Assumptions to perform a parametric test (Student's t) are normality (p-SW, Shapiro–Wilks test) and variance homogeneity (p-HomVar, Levene test); if those tests were rejected ($P > 0.05$) then a nonparametric test was performed. For *Liolaemus scolaroi* and *Liolaemus zullyae* sexual dimorphism was not evaluated owing to small female sample sizes (Not eval.). Significant values are shown in italics and bold. Not eval., N F = 1 denotes that female sample size was one and thus the test was not performed. PP, number of precloacal pores; SCI, scales in contact with the interparietal; LS, lorilabial scales; SS, supralabial scales; IS, infralabial scales; MS, midbody scales; DS, dorsal scales; VS, ventral scales; IL3, infradigital lamellae of the third finger; IL4, infradigital lamellae of the fourth toe.

Species	Variable	Females	Males	All	Statistic	*p*-*t*-test/KW	*p*-HomVar	*p*-SW
Liolaemus archeforus	PP	–	7.38 ± 1.06 (6–9)	–	–	–	–	0.48
L. archeforus	SCI	6 ± 0 (6–6)	6.5 ± 0.76 (6–8)	6.33 ± 0.65 (6–8)	1.04	0.42	Nonparametric	
L. archeforus	LS	5 ± 0.82 (4–6)	4.63 ± 0.52 (4–5)	4.75 ± 0.62 (4–6)	0.98	0.35	0.29	0.22
L. archeforus	SS	6.75 ± 0.5 (6–7)	7.13 ± 0.83 (6–8)	7 ± 0.74 (6–8)	–0.82	0.43	0.43	0.09
L. archeforus	IS	5.75 ± 0.5 (5–6)	5.88 ± 0.35 (5–6)	5.83 ± 0.39 (5–6)	0.12	>0.99	Nonparametric	
L. archeforus	MS	71.25 ± 2.22 (69–74)	72.5 ± 6.26 (64–84)	72.08 ± 5.16 (64–84)	–0.38	0.71	0.12	0.58
L. archeforus	DS	64.5 ± 1.73 (63–67)	64.25 ± 2.12 (62–68)	64.33 ± 1.92 (62–68)	0.2	0.84	0.80	0.31
L. archeforus	VS	101.25 ± 4.65 (97–107)	98.63 ± 2.83 (94–102)	99.5 ± 3.55 (94–107)	1.23	0.25	0.25	0.55
L. archeforus	IL3	16 ± 1.63 (14–18)	17 ± 1.31 (15–19)	16.67 ± 1.44 (14–19)	–1.15	0.28	0.57	0.26
L. archeforus	IL4	21 ± 1.41 (20–23)	22.25 ± 0.71 (21–23)	21.83 ± 1.11 (20–23)	–2.09	0.06	0.12	0.38
Liolaemus chacabucoense	PP	–	7.25 ± 1.22 (5–9)	–	–	–	–	***0.08***
L. chacabucoense	SCI	6.78 ± 1.3 (5–9)	7.17 ± 0.83 (6–9)	7 ± 1.05 (5–9)	–0.83	0.41	0.17	0.30
L. chacabucoense	LS	4.67 ± 0.5 (4–5)	4.92 ± 0.67 (4–6)	4.81 ± 0.6 (4–6)	0.56	0.38	Nonparametric	
L. chacabucoense	SS	6.89 ± 1.27 (5–9)	7.08 ± 1 (5–8)	7 ± 1.1 (5–9)	–0.39	0.70	0.45	0.3768
L. chacabucoense	IS	5.67 ± 0.5 (5–6)	5.92 ± 0.51 (5–7)	5.81 ± 0.51 (5–7)	0.73	0.28	Nonparametric	
L. chacabucoense	MS	74.22 ± 5.91 (61–83)	72.58 ± 2.91 (68–78)	73.29 ± 4.39 (61–83)	2.02	0.15	Nonparametric	
L. chacabucoense	DS	68.44 ± 5.22 (62–80)	66.5 ± 4.17 (60–72)	67.33 ± 4.63 (60–80)	0.95	0.35	0.48	0.3901
L. chacabucoense	VS	98 ± 7.91 (84–110)	94.92 ± 3.32 (90–101)	96.24 ± 5.79 (84–110)	1.38	0.23	Nonparametric	
L. chacabucoense	IL3	16.67 ± 1.22 (15–18)	17.08 ± 1.31 (16–20)	16.9 ± 1.26 (15–20)	–0.74	0.47	0.87	0.1731
L. chacabucoense	IL4	22.67 ± 1.5 (21–26)	22.33 ± 1.07 (21–25)	22.48 ± 1.25 (21–26)	0.32	0.55	Nonparametric	
Liolaemus escarchadosi	PP	–	6.88 ± 0.83 (6–8)	–	–	–	–	***0.01***
L. escarchadosi	SCI	6.6 ± 0.55 (6–7)	6.75 ± 0.71 (6–8)	6.69 ± 0.63 (6–8)	0.09	>0.99	Nonparametric	
L. escarchadosi	LS	5.2 ± 0.45 (5–6)	4.5 ± 0.76 (4–6)	4.77 ± 0.73 (4–6)	2.83	0.06	Nonparametric	
L. escarchadosi	SS	8.4 ± 1.14 (7–10)	7.75 ± 1.04 (6–9)	8 ± 1.08 (6–10)	1.06	0.31	0.77	0.62
L. escarchadosi	IS	5.6 ± 0.89 (5–7)	5.5 ± 0.53 (5–6)	5.54 ± 0.66 (5–7)	0	>0.99	Nonparametric	
L. escarchadosi	MS	64 ± 0 (64–64)	60.63 ± 2.88 (55–65)	61.92 ± 2.78 (55–65)	4.02	***0.01***	Nonparametric	
L. escarchadosi	DS	55.2 ± 3.83 (49–58)	53 ± 1.77 (51–56)	53.85 ± 2.82 (49–58)	1.42	0.18	0.07	0.12
L. escarchadosi	VS	98.2 ± 6.38 (91–107)	91.5 ± 8.52 (83–111)	94.08 ± 8.21 (83–111)	1.5	0.16	0.60	0.09
L. escarchadosi	IL3	16 ± 0.71 (15–17)	15.38 ± 1.19 (14–17)	15.62 ± 1.04 (14–17)	1.06	0.31	0.33	0.23
L. escarchadosi	IL4	21 ± 0.71 (20–22)	20.88 ± 1.13 (19–22)	20.92 ± 0.95 (19–22)	0.22	0.83	0.39	0.14

APPENDIX 5 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-*t*-test/KW	*p*-HomVar	*p*-SW
Liolaemus gallardoi	PP	–	8.28 ± 1.13 (7–11)	–	–	–	–	***0.00***
L. gallardoi	SCI	7.26 ± 0.92 (6–9)	6.89 ± 0.96 (6–9)	7.1 ± 0.94 (6–9)	1.56	0.19	Nonparametric	
L. gallardoi	LS	4.78 ± 0.52 (4–6)	5 ± 0.49 (4–6)	4.88 ± 0.51 (4–6)	1.1	0.18	Nonparametric	
L. gallardoi	SS	7.96 ± 1.02 (5–9)	8.5 ± 0.79 (7–10)	8.2 ± 0.95 (5–10)	2.01	0.12	Nonparametric	
L. gallardoi	IS	6.13 ± 0.55 (5–7)	6.39 ± 0.7 (5–8)	6.24 ± 0.62 (5–8)	1.1	0.22	Nonparametric	
L. gallardoi	MS	71.39 ± 3.71 (65–79)	74.83 ± 5 (66–84)	72.9 ± 4.6 (65–84)	–2.53	***0.02***	0.19	0.61
L. gallardoi	DS	64 ± 3.66 (59–71)	63.5 ± 3.63 (57–71)	63.78 ± 3.61 (57–71)	0.44	0.67	1.00	0.21
L. gallardoi	VS	99.52 ± 3.99 (92–106)	99.67 ± 5.13 (90–109)	99.59 ± 4.47 (90–109)	–0.1	0.92	0.26	0.74
L. gallardoi	IL3	16.7 ± 1.36 (14–18)	17.06 ± 1.3 (15–19)	16.85 ± 1.33 (14–19)	0.4	0.52	Nonparametric	
L. gallardoi	IL4	22.17 ± 1.67 (19–26)	22.94 ± 2.07 (19–27)	22.51 ± 1.87 (19–27)	–1.32	0.19	0.34	0.19
Liolaemus sarmientoi	PP	–	6 ± 1.41 (4–8)	–	–	–	–	0.71
L. sarmientoi	SCI	6.75 ± 0.5 (6–7)	7.29 ± 1.5 (6–10)	7.09 ± 1.22 (6–10)	–0.68	0.51	0.10	0.17
L. sarmientoi	LS	4.25 ± 0.5 (4–5)	4.43 ± 0.79 (4–6)	4.36 ± 0.67 (4–6)	0.04	0.83	Nonparametric	
L. sarmientoi	SS	8 ± 0 (8–8)	8.43 ± 0.79 (8–10)	8.27 ± 0.65 (8–10)	0.57	0.49	Nonparametric	
L. sarmientoi	IS	6.75 ± 0.96 (6–8)	5.43 ± 0.53 (5–6)	5.91 ± 0.94 (5–8)	2.99	***0.02***	0.21	0.08
L. sarmientoi	MS	61 ± 1.15 (60–62)	61.71 ± 2.36 (58–64)	61.45 ± 1.97 (58–64)	–0.56	0.59	0.27	0.31
L. sarmientoi	DS	56.25 ± 2.06 (54–58)	55 ± 2.58 (52–60)	55.45 ± 2.38 (52–60)	0.82	0.43	0.76	0.65
L. sarmientoi	VS	90.5 ± 4.43 (85–95)	89.86 ± 6.2 (78–96)	90.09 ± 5.39 (78–96)	0.18	0.86	0.62	0.26
L. sarmientoi	IL3	15.75 ± 0.5 (15–16)	16.14 ± 1.21 (15–18)	16 ± 1 (15–18)	–0.61	0.56	0.17	0.26
L. sarmientoi	IL4	21.25 ± 2.22 (18–23)	21.29 ± 1.8 (19–24)	21.27 ± 1.85 (18–24)	–0.03	0.98	0.61	0.66
Liolaemus scolaroi	PP	–	6.8 ± 1.3 (6–9)	–	–	–	–	***0.03***
L. scolaroi	SCI	6 ± 0 (6–6)	6.2 ± 0.45 (6–7)	6.17 ± 0.41 (6–7)		Not eval., *N* F = 1		***0.00***
L. scolaroi	LS	4 ± 0 (4–4)	4.8 ± 0.84 (4–6)	4.67 ± 0.82 (4–6)		Not eval., *N* F = 1		0.38
L. scolaroi	SS	7 ± 0 (7–7)	7.2 ± 0.45 (7–8)	7.17 ± 0.41 (7–8)		Not eval., *N* F = 1		***0.00***
L. scolaroi	IS	5 ± 0 (5–5)	6 ± 0.71 (5–7)	5.83 ± 0.75 (5–7)		Not eval., *N* F = 1		0.25
L. scolaroi	MS	80 ± 0 (80–80)	69.8 ± 5.72 (63–78)	71.5 ± 6.6 (63–80)		Not eval., *N* F = 1		0.83
L. scolaroi	DS	63 ± 0 (63–63)	63.4 ± 3.05 (60–67)	63.33 ± 2.73 (60–67)		Not eval., *N* F = 1		0.64
L. scolaroi	VS	101 ± 0 (101–101)	93 ± 6.82 (87–104)	94.33 ± 6.92 (87–104)		Not eval., *N* F = 1		0.40
L. scolaroi	IL3	16 ± 0 (16–16)	15.8 ± 0.84 (15–17)	15.83 ± 0.75 (15–17)		Not eval., *N* F = 1		0.38
L. scolaroi	IL4	22 ± 0 (22–22)	21.2 ± 2.05 (19–23)	21.33 ± 1.86 (19–23)		Not eval., *N* F = 1		0.09
Liolaemus tari	PP	–	8.6 ± 0.89 (8–10)	–	–	–	–	***0.01***
L. tari	SCI	6.43 ± 0.79 (6–8)	7 ± 1 (6–8)	6.67 ± 0.89 (6–8)	0.95	0.35	Nonparametric	
L. tari	LS	4.86 ± 0.69 (4–6)	5.4 ± 0.55 (5–6)	5.08 ± 0.67 (4–6)	–1.46	0.18	0.68	0.46
L. tari	SS	8.43 ± 0.98 (7–10)	7.6 ± 0.89 (6–8)	8.08 ± 1 (6–10)	1.5	0.16	0.91	0.32
L. tari	IS	5.86 ± 0.38 (5–6)	5.6 ± 0.55 (5–6)	5.75 ± 0.45 (5–6)	0.53	0.52	Nonparametric	
L. tari	MS	65.71 ± 2.69 (61–68)	64.8 ± 2.59 (62–69)	65.33 ± 2.57 (61–69)	0.59	0.57	0.99	0.90
L. tari	DS	56.43 ± 3.82 (52–61)	51.8 ± 2.68 (50–56)	54.5 ± 4.03 (50–61)	2.32	***0.04***	0.51	0.06
L. tari	VS	100.57 ± 6.5 (94–113)	96.6 ± 7.09 (88–104)	98.92 ± 6.75 (88–113)	1.01	0.34	0.81	0.57
L. tari	IL3	15.29 ± 1.38 (13–17)	15.6 ± 1.14 (14–17)	15.42 ± 1.24 (13–17)	–0.42	0.69	0.74	0.49
L. tari	IL4	20.57 ± 1.81 (17–22)	20.8 ± 1.1 (19–22)	20.67 ± 1.5 (17–22)	–0.25	0.81	0.35	0.06

APPENDIX 5 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-*t*-test/KW	*p*-HomVar	*p*-SW
Liolaemus zullyae	PP	–	6.86 ± 1.07 (5–8)	–	–	–	–	0.33
L. zullyae	SCI	7 ± 0 (7–7)	6.86 ± 0.9 (6–8)	6.88 ± 0.83 (6–8)		Not eval., *N* F = 1		0.05
L. zullyae	LS	5 ± 0 (5–5)	4.86 ± 0.38 (4–5)	4.88 ± 0.35 (4–5)		Not eval., *N* F = 1		***<0.0001***
L. zullyae	SS	8 ± 0 (8–8)	7.86 ± 0.69 (7–9)	7.88 ± 0.64 (7–9)		Not eval., *N* F = 1		0.14
L. zullyae	IS	6 ± 0 (6–6)	6.14 ± 0.69 (5–7)	6.13 ± 0.64 (5–7)		Not eval., *N* F = 1		0.14
L. zullyae	MS	75 ± 0 (75–75)	73.43 ± 4.72 (69–83)	73.63 ± 4.41 (69–83)		Not eval., *N* F = 1		0.18
L. zullyae	DS	70 ± 0 (70–70)	63.57 ± 4.76 (57–70)	64.38 ± 4.96 (57–70)		Not eval., *N* F = 1		0.80
L. zullyae	VS	100 ± 0 (100–100)	95.43 ± 3.41 (91–102)	96 ± 3.55 (91–102)		Not eval., *N* F = 1		0.47
L. zullyae	IL3	17 ± 0 (17–17)	17.43 ± 1.62 (15–20)	17.38 ± 1.51 (15–20)		Not eval., *N* F = 1		0.86
L. zullyae	IL4	22 ± 0 (22–22)	22 ± 2 (20–25)	22 ± 1.85 (20–25)		Not eval., *N* F = 1		0.35
Liolaemus baguali	PP	–	8.25 ± 1.39 (6–10)	–	–	–	–	***<0.0001***
L. baguali	SCI	7 ± 0.91 (5–8)	7.13 ± 1.13 (6–9)	7.05 ± 0.97 (5–9)	–0.28	0.78	0.50	0.29
L. baguali	LS	5.15 ± 0.55 (4–6)	5.5 ± 1.2 (4–7)	5.29 ± 0.85 (4–7)	0.42	0.47	Nonparametric	
L. baguali	SS	8.69 ± 0.75 (8–10)	9.38 ± 0.52 (9–10)	8.95 ± 0.74 (8–10)	3.68	***0.04***	Nonparametric	
L. baguali	IS	5.77 ± 0.73 (5–7)	6.25 ± 0.71 (5–7)	5.95 ± 0.74 (5–7)	–1.49	0.15	0.99	0.18
L. baguali	MS	76.85 ± 4.65 (69–84)	77.5 ± 3.25 (71–80)	77.1 ± 4.1 (69–84)	–0.35	0.73	0.35	0.51
L. baguali	DS	63.62 ± 3.31 (58–69)	64 ± 3.38 (58–68)	63.76 ± 3.25 (58–69)	–0.26	0.80	0.90	0.49
L. baguali	VS	106.38 ± 4.37 (96–112)	106 ± 4.28 (99–111)	106.24 ± 4.23 (96–112)	0.2	0.85	1.00	0.12
L. baguali	IL3	17.54 ± 1.94 (14–20)	18.5 ± 0.53 (18–19)	17.9 ± 1.61 (14–20)	0.76	0.37	Nonparametric	
L. baguali	IL4	22.62 ± 2.53 (16–26)	23.25 ± 1.28 (21–25)	22.86 ± 2.13 (16–26)	–0.65	0.52	0.08	0.12
Liolaemus kingii	PP	–	7.73 ± 1.03 (6–10)	–	–	–	–	***0.00***
L. kingii	SCI	6.79 ± 1.05 (6–9)	6.4 ± 0.51 (6–7)	6.59 ± 0.82 (6–9)	0.52	0.41	Nonparametric	
L. kingii	LS	4.79 ± 0.58 (4–6)	5.47 ± 0.74 (4–7)	5.14 ± 0.74 (4–7)	–2.74	***0.01***	0.38	0.22
L. kingii	SS	8.64 ± 0.84 (7–10)	9.13 ± 0.92 (8–11)	8.9 ± 0.9 (7–11)	–1.5	0.15	0.77	0.47
L. kingii	IS	6.5 ± 0.85 (5–8)	6.13 ± 0.99 (4–8)	6.31 ± 0.93 (4–8)	1.06	0.30	0.60	0.58
L. kingii	MS	75 ± 5.42 (67–85)	73.2 ± 4.68 (67–85)	74.07 ± 5.04 (67–85)	0.96	0.34	0.59	0.09
L. kingii	DS	66.79 ± 4.71 (58–73)	63.53 ± 6.01 (51–74)	65.1 ± 5.58 (51–74)	1.61	0.12	0.39	0.68
L. kingii	VS	102.07 ± 8.3 (84–123)	102.87 ± 7.53 (90–115)	102.48 ± 7.78 (84–123)	–0.27	0.79	0.72	0.79
L. kingii	IL3	16.86 ± 1.96 (13–21)	17.13 ± 1.13 (15–20)	17 ± 1.56 (13–21)	0.21	0.63	Nonparametric	
L. kingii	IL4	22.36 ± 2.5 (19–27)	22.33 ± 2.32 (19–28)	22.34 ± 2.36 (19–28)	0.04	0.98	Nonparametric	
Liolaemus somuncurae	PP	–	5.6 ± 0.7 (5–7)	–	–	–	Nonparametric	
L. somuncurae	SCI	6.67 ± 1.63 (6–10)	6.1 ± 0.32 (6–7)	6.31 ± 1.01 (6–10)	0.07	0.75	Nonparametric	
L. somuncurae	LS	5 ± 0.89 (4–6)	5.6 ± 0.97 (4–7)	5.38 ± 0.96 (4–7)	–1.23	0.24	0.91	0.33
L. somuncurae	SS	8.33 ± 0.82 (7–9)	8.6 ± 0.7 (8–10)	8.5 ± 0.73 (7–10)	–0.69	0.50	0.65	0.29
L. somuncurae	IS	6.17 ± 1.17 (5–8)	5.6 ± 0.52 (5–6)	5.81 ± 0.83 (5–8)	0.75	0.45	Nonparametric	
L. somuncurae	MS	79.17 ± 4.17 (73–83)	80.50 ± 5.21 (75–93)	80.00 ± 4.75 (73–93)	–0.53	0.60	0.64	0.30
L. somuncurae	DS	69.83 ± 1.47 (68–72)	69.3 ± 2.79 (65–74)	69.5 ± 2.34 (65–74)	0.43	0.67	0.17	0.86
L. somuncurae	VS	110 ± 8.85 (98–118)	113.3 ± 3.62 (108–118)	112.06 ± 6.06 (98–118)	0.07	0.80	Nonparametric	
L. somuncurae	IL3	17.17 ± 0.98 (16–19)	18 ± 0.94 (17–19)	17.69 ± 1.01 (16–19)	2.31	0.11	Nonparametric	
L. somuncurae	IL4	23.83 ± 1.47 (22–26)	24.1 ± 1.37 (22–26)	24 ± 1.37 (22–26)	–0.37	0.72	0.80	0.22

APPENDIX 5 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-*t*-test/KW	*p*-HomVar	*p*-SW
Liolaemus tristis	PP	–	7.75 ± 0.97 (6–9)	–	–	–	–	***0.01***
L. tristis	SCI	6.59 ± 1 (6–9)	7 ± 1.41 (6–10)	6.76 ± 1.18 (6–10)	0.31	0.52	Nonparametric	
L. tristis	LS	4.59 ± 0.51 (4–5)	4.92 ± 0.67 (4–6)	4.72 ± 0.59 (4–6)	1.38	0.17	Nonparametric	
L. tristis	SS	8 ± 0.61 (7–9)	8.58 ± 0.67 (8–10)	8.24 ± 0.69 (7–10)	–2.43	***0.02***	0.73	0.05
L. tristis	IS	6.29 ± 0.85 (5–8)	6.42 ± 0.67 (5–7)	6.34 ± 0.77 (5–8)	0.44	0.47	Nonparametric	
L. tristis	MS	77.35 ± 5.74 (67–86)	74.25 ± 5.14 (65–84)	76.07 ± 5.62 (65–86)	1.5	0.15	0.72	0.39
L. tristis	DS	68.47 ± 4.32 (62–75)	67.17 ± 3.9 (60–73)	67.93 ± 4.13 (60–75)	0.83	0.41	0.75	0.10
L. tristis	VS	103.12 ± 5.91 (94–118)	103.5 ± 5.92 (95–114)	103.28 ± 5.81 (94–118)	–0.17	0.87	0.97	0.44
L. tristis	IL3	17.35 ± 1.27 (15–20)	17.58 ± 1.51 (16–20)	17.45 ± 1.35 (15–20)	–0.45	0.66	0.52	0.09
L. tristis	IL4	23 ± 1.77 (18–25)	23.75 ± 1.76 (20–26)	23.31 ± 1.77 (18–26)	5.33	0.06	Nonparametric	
Liolaemus uptoni	PP	–	6.67 ± 0.52 (6–7)	–	–	–	–	***0.00***
L. uptoni	SCI	6.25 ± 0.5 (6–7)	7.5 ± 1.05 (6–9)	7 ± 1.05 (6–9)	–2.19	0.06	0.25	0.85
L. uptoni	LS	4.4 ± 0.55 (4–5)	4.83 ± 0.41 (4–5)	4.64 ± 0.5 (4–5)	–1.51	0.17	0.53	0.16
L. uptoni	SS	8.4 ± 0.89 (7–9)	7.5 ± 1.05 (6–9)	7.91 ± 1.04 (6–9)	1.51	0.16	0.78	0.27
L. uptoni	IS	5.2 ± 0.45 (5–6)	4.67 ± 1.03 (3–6)	4.91 ± 0.83 (3–6)	1.07	0.31	0.13	0.81
L. uptoni	MS	69.6 ± 3.71 (64–73)	70.83 ± 2.4 (68–75)	70.27 ± 2.97 (64–75)	–0.67	0.52	0.36	0.41
L. uptoni	DS	65.4 ± 2.79 (62–68)	65.5 ± 3.27 (60–68)	65.45 ± 2.91 (60–68)	0.01	0.95	Nonparametric	
L. uptoni	VS	106.2 ± 9.52 (95–118)	108.33 ± 5.99 (99–114)	107.36 ± 7.45 (95–118)	–0.45	0.66	0.34	0.68
L. uptoni	IL3	16.6 ± 0.55 (16–17)	17.67 ± 1.51 (16–20)	17.18 ± 1.25 (16–20)	–1.49	0.17	0.07	0.16
L. uptoni	IL4	24.8 ± 1.1 (23–26)	24 ± 1.67 (21–26)	24.36 ± 1.43 (21–26)	0.91	0.38	0.43	0.24
Liolaemus avilae	PP	–	–	–	–	–	–	–
L. avilae	SCI	8.5 ± 1.73 (7–10)	7.2 ± 0.84 (6–8)	7.78 ± 1.39 (6–10)	1.49	0.18	0.19	0.10
L. avilae	LS	4 ± 0.82 (3–5)	4.4 ± 0.55 (4–5)	4.22 ± 0.67 (3–5)	–0.88	0.41	0.46	0.65
L. avilae	SS	5 ± 0.82 (4–6)	5 ± 0 (5–5)	5 ± 0.5 (4–6)	0	>0.99	Nonparametric	
L. avilae	IS	4.25 ± 0.5 (4–5)	4.8 ± 0.45 (4–5)	4.56 ± 0.53 (4–5)	–1.74	0.13	0.81	0.59
L. avilae	MS	56.75 ± 3.86 (53–61)	56.6 ± 2.88 (53–59)	56.67 ± 3.12 (53–61)	0.06	0.95	Nonparametric	
L. avilae	DS	55.75 ± 4.03 (51–60)	53.6 ± 1.34 (52–55)	54.56 ± 2.88 (51–60)	1.13	0.29	0.06	0.95
L. avilae	VS	84.75 ± 4.57 (80–91)	81.2 ± 6.83 (72–90)	82.78 ± 5.89 (72–91)	0.89	0.40	0.54	0.90
L. avilae	IL3	15.75 ± 0.5 (15–16)	16.2 ± 0.84 (15–17)	16 ± 0.71 (15–17)	–0.94	0.38	0.42	0.44
L. avilae	IL4	21.5 ± 1.73 (20–24)	22.8 ± 1.48 (21–25)	22.22 ± 1.64 (20–25)	–1.22	0.26	0.75	0.23

APPENDIX 5 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-*t*-test/KW	*p*-HomVar	*p*-SW
Liolaemus hatcheri	PP	–	–	–	–	–	–	–
L. hatcheri	SCI	6.75 ± 1.04 (6–9)	6.92 ± 1.62 (5–10)	6.85 ± 1.39 (5–10)	0.01	0.90	Nonparametric	
L. hatcheri	LS	4.25 ± 0.46 (4–5)	4.67 ± 0.78 (4–6)	4.5 ± 0.69 (4–6)	100017	0.21	Nonparametric	
L. hatcheri	SS	7 ± 0.76 (6–8)	6.75 ± 0.75 (6–8)	6.85 ± 0.75 (6–8)	0.48	0.45	Nonparametric	
L. hatcheri	IS	5.25 ± 0.46 (5–6)	5.25 ± 0.97 (4–7)	5.25 ± 0.79 (4–7)	0	>0.99	Nonparametric	
L. hatcheri	MS	48.75 ± 3.41 (43–54)	48.58 ± 3.42 (44–57)	48.65 ± 3.33 (43–57)	0.11	0.92	0.97	0.76
L. hatcheri	DS	50.5 ± 2.67 (47–55)	47.58 ± 3.58 (43–54)	48.75 ± 3.49 (43–55)	1.96	0.07	0.45	0.14
L. hatcheri	VS	68.25 ± 4.03 (62–73)	67.5 ± 3 (63–74)	67.8 ± 3.37 (62–74)	0.48	0.64	0.37	0.78
L. hatcheri	IL3	14.75 ± 1.39 (13–17)	14.92 ± 1.44 (13–18)	14.85 ± 1.39 (13–18)	–0.26	0.80	0.95	0.17
L. hatcheri	IL4	19.63 ± 1.3 (18–22)	19.33 ± 1.3 (18–22)	19.45 ± 1.28 (18–22)	0.25	0.60	Nonparametric	
Liolaemus kolengh	PP	–	–	–	–	–	–	–
L. kolengh	SCI	6.25 ± 0.86 (4–7)	6.27 ± 0.96 (5–8)	6.26 ± 0.89 (4–8)	0.09	0.75	Nonparametric	
L. kolengh	LS	4.31 ± 0.48 (4–5)	4.27 ± 0.7 (3–5)	4.29 ± 0.59 (3–5)	0.03	0.98	Nonparametric	
L. kolengh	SS	6.56 ± 0.89 (5–8)	6.73 ± 0.7 (6–8)	6.65 ± 0.8 (5–8)	0.17	0.65	Nonparametric	
L. kolengh	IS	5.25 ± 0.45 (5–6)	5.33 ± 0.62 (5–7)	5.29 ± 0.53 (5–7)	0.02	0.84	Nonparametric	
L. kolengh	MS	51.13 ± 2.22 (48–55)	49.93 ± 2.81 (44–54)	50.55 ± 2.55 (44–55)	1.31	0.20	0.37	0.38
L. kolengh	DS	50.31 ± 2.18 (46–54)	48.33 ± 3.04 (44–54)	49.35 ± 2.78 (44–54)	2.09	***0.05***	0.22	0.26
L. kolengh	VS	70.13 ± 3.83 (63–76)	66.93 ± 3.33 (61–73)	68.58 ± 3.89 (61–76)	2.47	***0.02***	0.61	0.24
L. kolengh	IL3	14.25 ± 0.86 (13–16)	15 ± 0.88 (13–16)	14.6 ± 0.93 (13–16)	–2.37	***0.03***	*0.92*	0.26
L. kolengh	IL4	18.88 ± 1.36 (17–22)	18.6 ± 1.59 (16–21)	18.74 ± 1.46 (16–22)	0.52	0.61	0.55	0.18
Liolaemus lineomaculatus	PP	–	–	–	–	–	–	–
L. lineomaculatus	SCI	6.8 ± 0.84 (6–8)	7 ± 0.89 (6–8)	6.91 ± 0.83 (6–8)	–0.38	0.71	0.92	0.08
L. lineomaculatus	LS	4.2 ± 0.45 (4–5)	4.5 ± 0.84 (4–6)	4.36 ± 0.67 (4–6)	0.21	0.85	Nonparametric	
L. lineomaculatus	SS	6.8 ± 0.84 (6–8)	6.33 ± 0.82 (5–7)	6.55 ± 0.82 (5–8)	0.93	0.37	0.93	0.62
L. lineomaculatus	IS	4.4 ± 0.55 (4–5)	4.67 ± 0.52 (4–5)	4.55 ± 0.52 (4–5)	0.53	0.57	Nonparametric	
L. lineomaculatus	MS	59.8 ± 4.15 (53–63)	60.83 ± 3.87 (55–65)	60.36 ± 3.83 (53–65)	–0.43	0.68	0.86	0.10
L. lineomaculatus	DS	59 ± 3.94 (55–64)	57.83 ± 1.6 (56–60)	58.36 ± 2.8 (55–64)	0.67	0.52	0.07	0.65
L. lineomaculatus	VS	85.2 ± 5.45 (81–94)	85.33 ± 2.25 (83–89)	85.27 ± 3.8 (81–94)	–0.06	0.96	0.08	0.24
L. lineomaculatus	IL3	16 ± 1.41 (15–18)	16 ± 1.55 (15–19)	16 ± 1.41 (15–19)	0.01	>0.99	Nonparametric	
L. lineomaculatus	IL4	21.6 ± 1.52 (20–24)	22 ± 1.67 (20–25)	21.82 ± 1.54 (20–25)	–0.41	0.69	0.87	0.25
Liolaemus morandae	PP	–	–	–	–	–	–	–
L. morandae	SCI	6.2 ± 0.45 (6–7)	6.5 ± 0.71 (6–7)	6.29 ± 0.49 (6–7)	–0.7	0.51	0.38	0.06
L. morandae	LS	4 ± 0.71 (3–5)	4 ± 1.41 (3–5)	4 ± 0.82 (3–5)	0	>0.99	0.23	0.11
L. morandae	SS	6.6 ± 1.52 (5–9)	8 ± 2.83 (6–10)	7 ± 1.83 (5–10)	–0.9	0.41	0.27	0.38
L. morandae	IS	5.2 ± 0.45 (5–6)	6 ± 0 (6–6)	5.43 ± 0.53 (5–6)	2.4	0.14	Nonparametric	
L. morandae	MS	60.4 ± 1.67 (59–63)	58 ± 4.24 (55–61)	59.71 ± 2.5 (55–63)	1.19	0.29	0.13	0.55
L. morandae	DS	52 ± 3.81 (47–57)	50 ± 0 (50–50)	51.43 ± 3.26 (47–57)	2.4	0.62	Nonparametric	
L. morandae	VS	81.4 ± 2.61 (79–85)	82 ± 4.24 (79–85)	81.57 ± 2.76 (79–85)	–0.24	0.82	0.36	0.16
L. morandae	IL3	15.6 ± 1.52 (13–17)	15.5 ± 0.71 (15–16)	15.57 ± 1.27 (13–17)	0.09	0.93	0.67	0.10
L. morandae	IL4	21.4 ± 1.95 (18–23)	21 ± 0 (21–21)	21.29 ± 1.6 (18–23)	3.04	0.29	Nonparametric	

APPENDIX 5 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-*t*-test/KW	*p*-HomVar	*p*-SW
Liolaemus silvanae	PP	–	–	–	–	–	–	–
L. silvanae	SCI	6.88 ± 0.99 (6–8)	7 ± 1.12 (5–8)	6.94 ± 1.03 (5–8)	0.08	0.78	Nonparametric	
L. silvanae	LS	4 ± 0.53 (3–5)	4.33 ± 0.71 (3–5)	4.18 ± 0.64 (3–5)	–1.08	0.30	0.48	0.24
L. silvanae	SS	6 ± 0.53 (5–7)	6.33 ± 0.87 (5–7)	6.18 ± 0.73 (5–7)	1.02	0.31	Nonparametric	
L. silvanae	IS	4.88 ± 0.83 (4–6)	4.89 ± 0.6 (4–6)	4.88 ± 0.7 (4–6)	0.01	0.84	Nonparametric	
L. silvanae	MS	60 ± 2.62 (56–64)	59.33 ± 3.24 (55–65)	59.65 ± 2.89 (55–65)	0.46	0.65	0.59	0.60
L. silvanae	DS	57.25 ± 1.91 (54–60)	54.89 ± 3.66 (52–64)	56 ± 3.12 (52–64)	5.11	***0.02***	Nonparametric	
L. silvanae	VS	73.5 ± 2.27 (70–76)	75.56 ± 2.88 (71–80)	74.59 ± 2.74 (70–80)	–1.62	0.13	0.54	0.66
L. silvanae	IL3	16.25 ± 1.04 (14–17)	16.22 ± 1.3 (15–18)	16.24 ± 1.15 (14–18)	0.05	0.96	0.56	0.18
L. silvanae	IL4	19.75 ± 1.39 (18–22)	20.67 ± 1.32 (19–23)	20.24 ± 1.39 (18–23)	–1.39	0.18	0.88	0.09
Liolaemus caparensis	PP	–	3.67 ± 0.58 (3–4)	–	–	–	Nonparametric	
L. caparensis	SCI	6.71 ± 1.11 (5–8)	6 ± 1 (5–7)	6.50 ± 1.08 (5–8)	0.95	0.37	0.77	0.42
L. caparensis	LS	5 ± 0.58 (4–6)	4.33 ± 1.15 (3–5)	4.80 ± 0.79 (3–6)	1.26	0.25	0.09	0.21
L. caparensis	SS	6.71 ± 0.76 (6–8)	6.33 ± 0.58 (6–7)	6.60 ± 0.79 (6–8)	0.77	0.46	0.83	0.20
L. caparensis	IS	4.71 ± 0.76 (3–5)	4.67 ± 0.58 (4–5)	4.79 ± 0.67 (3–5)	0.12	>0.99	Nonparametric	
L. caparensis	MS	42.71 ± 2.56 (39–46)	42.67 ± 2.31 (40–44)	42.70 ± 2.36 (39–46)	0.03	0.98	0.97	0.35
L. caparensis	DS	41.43 ± 1.81 (39–45)	39.67 ± 1.15 (39–41)	40.90 ± 1.79 (39–45)	1.53	0.16	0.63	0.21
L. caparensis	VS	68.14 ± 2.67 (64–72)	67.33 ± 3.21 (65–71)	67.90 ± 2.69 (64–72)	0.42	0.69	0.61	0.56
L. caparensis	IL3	14.43 ± 0.53 (14–15)	15.33 ± 0.58 (15–16)	14.70 ± 0.67 (14–16)	2.92	0.11	Nonparametric	
L. caparensis	IL4	19.86 ± 1.35 (18–22)	20.5 ± 0.71 (20–21)	20.00 ± 1.22 (18–22)	–0.63	0.55	0.76	0.96
Liolaemus magellanicus	PP	–	3.67 ± 0.82 (3–5)	–	–	–	–	0.12
L. magellanicus	SCI	6.5 ± 1 (6–8)	7.17 ± 0.98 (6–9)	6.9 ± 0.99 (6–9)	1.38	0.24	Nonparametric	
L. magellanicus	LS	4.25 ± 0.5 (4–5)	4.67 ± 0.52 (4–5)	4.5 ± 0.53 (4–5)	–1.26	0.24	0.98	0.16
L. magellanicus	SS	6.75 ± 0.5 (6–7)	6.5 ± 0.55 (6–7)	6.6 ± 0.52 (6–7)	0.41	0.57	Nonparametric	
L. magellanicus	IS	5 ± 0.82 (4–6)	4.67 ± 0.52 (4–5)	4.8 ± 0.63 (4–6)	0.8	0.45	0.35	0.40
L. magellanicus	MS	40.5 ± 3.7 (36–44)	41.33 ± 1.75 (39–44)	41 ± 2.54 (36–44)	–0.49	0.64	0.14	0.78
L. magellanicus	DS	37 ± 1.83 (35–39)	36.83 ± 2.48 (34–41)	36.9 ± 2.13 (34–41)	0.11	0.91	0.65	0.77
L. magellanicus	VS	58.25 ± 3.2 (55–61)	57.5 ± 5.09 (49–63)	57.8 ± 4.24 (49–63)	0.26	0.80	0.48	0.65
L. magellanicus	IL3	12.25 ± 0.96 (11–13)	13.67 ± 1.03 (12–15)	13.1 ± 1.2 (11–15)	–2.18	0.06	0.96	0.53
L. magellanicus	IL4	17.25 ± 0.96 (16–18)	18.2 ± 1.1 (17–20)	17.78 ± 1.09 (16–20)	–1.36	0.21	0.86	0.41

APPENDIX 6

Morphometric variables from each species, discriminated by sex. Mean ± SD (min.–max.) are shown; Student's *t* test or Kruskal–Wallis (when assumptions were rejected; nonparametric) *P*-values and statistics are shown. Assumptions to perform a parametric test (Student's *t*) are normality (*p*-SW, Shapiro–Wilks test) and variance homogeneity (*p*-HomVar, Levene test); if those tests were rejected ($P > 0.05$) a nonparametric test was performed. For *Liolaemus scolaroi* and *Liolaemus zullyae* sexual dimorphism was not evaluated owing to small female sample sizes (Not eval.). Significant values are in italics and bold. Not eval., *N* F = 1 denotes that female sample size was one and thus the test was not performed. SVL, snout–vent length; DFH, distance between fore and hind limbs; FOL, foot length; TFL, tibia–fibula length; RUL, radius–ulna length; HAL, hand length; HH, head height; HW, head width; HL, head length; RND, rostral–nasal distance; RH, rostral height; DRE, distance from rostral to the eye; AH, auditory meatus height.

Species	Variable	Females	Males	All	Statistic	*p*-t-test/KW	*p*-HomVar	*p*-SW
Liolaemus archeforus	SVL	67 ± 6.24 (62–74)	71.75 ± 8.51 (56–84)	70.45 ± 7.97 (56–84)	–0.87	0.41	0.79	0.90
L. archeforus	DFH	33.49 ± 1.45 (32.1–35)	32.98 ± 4.62 (23.57–37.6)	33.12 ± 3.93 (23.57–37.6)	0.18	0.86	0.18	0.32
L. archeforus	FOL	17.28 ± 2.09 (15.9–19)	18.98 ± 2.07 (15.–22.33)	18.52 ± 2.12 (15.03–22.33)	–1.21	0.26	0.81	0.95
L. archeforus	TFL	11.45 ± 1.17 (10.6–12.8)	13.59 ± 1.77 (10.46–15.9)	13 ± 1.86 (10.46–15.85)	–1.9	0.09	0.67	0.86
L. archeforus	RUL	6.33 ± 1.19 (5.1–7.48)	7.13 ± 1.18 (5.79–8.7)	6.91 ± 1.18 (5.1–8.68)	–1.01	0.34	0.81	0.06
L. archeforus	HAL	10.67 ± 1.68 (9.2–12.5)	10.76 ± 1.89 (8.11–14.51)	10.73 ± 1.75 (8.11–14.51)	–0.07	0.95	0.98	0.89
L. archeforus	HH	7.67 ± 0.61 (7.31–8.38)	8.98 ± 1.21 (7.09–10.77)	8.62 ± 1.21 (7.09–10.77)	–1.75	0.11	0.44	0.92
L. archeforus	HW	10.72 ± 0.79 (10–11.58)	12.94 ± 1.8 (9.74–15.51)	12.34 ± 1.86 (9.74–15.51)	–2.01	0.08	0.34	0.89
L. archeforus	HL	12.85 ± 0.61 (12.2–13.4)	15.11 ± 1.67 (12.4–17.97)	14.49 ± 1.77 (12.21–17.97)	–2.22	0.05	0.25	0.98
L. archeforus	RND	1.88 ± 0.16 (1.78–2.07)	2.41 ± 0.27 (2–2.89)	2.26 ± 0.34 (1.78–2.89)	–3.08	***0.01***	0.59	0.99
L. archeforus	RH	0.98 ± 0.04 (0.94–1.02)	1.18 ± 0.15 (0.9–1.34)	1.12 ± 0.16 (0.9–1.34)	–2.27	***0.05***	0.15	0.50
L. archeforus	DRE	5.48 ± 0.43 (4.99–5.78)	6.49 ± 0.59 (5.59–7.19)	6.21 ± 0.71 (4.99–7.19)	–2.66	***0.03***	0.78	0.17
L. archeforus	AH	2.47 ± 0.04 (2.42–2.5)	2.75 ± 0.47 (2.21–3.47)	2.67 ± 0.41 (2.21–3.47)	0.67	0.49	Nonparametric	
L. archeforus	TL	79 ± 0 (79–79)	90 ± 7.07 (85–95)	86.33 ± 8.08 (79–95)	Not eval., *N* F = 1			>0.99
Liolaemus chacabucoense	SVL	65.33 ± 3.88 (62–72)	71.89 ± 3.3 (66–77)	69.27 ± 4.76 (62–77)	–3.52	***<0.001***	0.65	0.80
L. chacabucoense	DFH	36.14 ± 2.85 (33.1–41.2)	34.49 ± 2.7 (30.7–38.1)	35.15 ± 2.79 (30.7–41.23)	1.14	0.28	0.85	0.56
L. chacabucoense	FOL	15.34 ± 1.03 (13.6–16.9)	18.25 ± 0.9 (16.29–19.4)	17.08 ± 1.74 (13.63–19.4)	–5.81	***<0.001***	0.71	0.21
L. chacabucoense	TFL	11.02 ± 0.41 (10.5–11.6)	13.41 ± 0.48 (12.41–14)	12.45 ± 1.28 (10.47–13.99)	10.13	***<0.001***	0.79	0.45
L. chacabucoense	RUL	5.78 ± 0.6 (5.13–6.79)	6.91 ± 0.87 (5.5–8.26)	6.46 ± 0.94 (5.13–8.26)	–2.76	***0.02***	0.43	0.88
L. chacabucoense	HAL	9.07 ± 0.74 (7.97–9.92)	10.69 ± 1.02 (9.21–11.97)	10.04 ± 1.21 (7.97–11.97)	–3.34	***0.01***	0.49	0.32
L. chacabucoense	HH	7.25 ± 0.45 (6.75–7.75)	9.18 ± 0.81 (8.13–10.93)	8.41 ± 1.19 (6.75–10.93)	–5.29	***<0.001***	0.22	0.56
L. chacabucoense	HW	10.56 ± 0.52 (9.8–11.14)	12.72 ± 0.77 (11.34–13.7)	11.86 ± 1.28 (9.79–13.72)	–5.99	***<0.001***	0.39	0.66
L. chacabucoense	HL	12.66 ± 0.68 (11.9–13.4)	14.87 ± 0.99 (13.1–16.29)	13.98 ± 1.41 (11.85–16.29)	–4.72	***<0.001***	0.43	0.81
L. chacabucoense	RND	2 ± 0.23 (1.75–2.32)	2.35 ± 0.26 (2.05–2.81)	2.21 ± 0.3 (1.75–2.81)	–2.65	***0.02***	0.78	0.28
L. chacabucoense	RH	0.91 ± 0.12 (0.8–1.06)	1.12 ± 0.14 (0.97–1.36)	1.04 ± 0.17 (0.8–1.36)	5.01	***0.02***	Nonparametric	
L. chacabucoense	DRE	5.83 ± 0.52 (5.27–6.56)	6.47 ± 0.34 (6.14–7.16)	6.22 ± 0.52 (5.27–7.16)	–2.91	***0.01***	0.28	0.15
L. chacabucoense	AH	2.48 ± 0.18 (2.22–2.69)	2.95 ± 0.19 (2.67–3.23)	2.76 ± 0.3 (2.22–3.23)	–4.74	***<0.001***	0.92	0.35
L. chacabucoense	TL	72.75 ± 13.18 (55–85)	85.67 ± 7.28 (73–92)	80.5 ± 11.48 (55–92)	–2.02	0.08	0.23	0.48

APPENDIX 6 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-t-test/KW	*p*-HomVar	*p*-SW
Liolaemus escarchadosi	SVL	71.5 ± 5.2 (64–76)	76.2 ± 6.14 (67–83)	74.11 ± 5.93 (64–83)	–1.22	0.26	0.82	0.36
L. escarchadosi	DFH	35.31 ± 4.56 (28.7–38.4)	35.43 ± 2.85 (31.14–38.7)	35.37 ± 3.45 (28.7–38.7)	–0.05	0.96	0.39	0.13
L. escarchadosi	FOL	17.93 ± 0.61 (17.4–18.8)	19.59 ± 1.03 (18.45–21.1)	18.85 ± 1.2 (17.43–21.12)	–2.82	***0.03***	0.41	0.75
L. escarchadosi	TFL	13.26 ± 0.59 (12.8–14.1)	14.5 ± 0.33 (14.2–14.99)	13.95 ± 0.78 (12.8–14.99)	–4.03	***0.01***	0.29	0.22
L. escarchadosi	RUL	8.15 ± 0.45 (7.61–8.69)	9.25 ± 0.48 (8.52–9.81)	8.76 ± 0.73 (7.61–9.81)	–3.53	***0.01***	0.97	0.49
L. escarchadosi	HAL	10.66 ± 0.05 (10.6–10.7)	10.88 ± 0.35 (10.6–11.46)	10.78 ± 0.28 (10.59–11.46)	1.5	0.28	Nonparametric	
L. escarchadosi	HH	8.64 ± 0.65 (8.03–9.53)	10.02 ± 1.26 (8.45–11.64)	9.41 ± 1.21 (8.03–11.64)	–1.97	0.09	0.31	0.93
L. escarchadosi	HW	12.4 ± 0.48 (11.7–12.79)	14.1 ± 1.17 (12.35–15.5)	13.35 ± 1.26 (11.71–15.5)	–2.7	***0.03***	0.18	0.81
L. escarchadosi	HL	15.5 ± 0.62 (14.75–16.2)	17.47 ± 1.58 (15.03–19.2)	16.59 ± 1.58 (14.75–19.2)	–2.34	0.05	0.16	0.86
L. escarchadosi	RND	2.5 ± 0.2 (2.29–2.76)	2.71 ± 0.31 (2.37–2.99)	2.62 ± 0.27 (2.29–2.99)	–1.16	0.29	0.49	0.12
L. escarchadosi	RH	2.57 ± 5.13 (1.06–1.3)	1.21 ± 0.15 (1.04–1.37)	2.11 ± 3.42 (1.04–1.37)	0	>0.99	Nonparametric	
L. escarchadosi	DRE	9.34 ± 0.33 (9.01–9.66)	10.14 ± 0.82 (9.16–11.32)	9.78 ± 0.75 (9.01–11.32)	–1.82	0.11	0.17	0.92
L. escarchadosi	AH	2.84 ± 0.45 (2.25–3.29)	3.37 ± 0.4 (2.73–3.76)	3.13 ± 0.48 (2.25–3.76)	–1.89	0.10	0.78	0.20
L. escarchadosi	TL	83 ± 5.66 (79–87)	95.67 ± 4.04 (92–100)	90.6 ± 8.02 (79–100)	–2.99	0.06	0.59	0.12
Liolaemus gallardoi	SVL	73.8 ± 3.69 (66–79)	74.41 ± 4.15 (64–81)	74.13 ± 3.89 (64–81)	–0.44	0.66	0.66	0.44
L. gallardoi	DFH	37.69 ± 3.17 (33.1–43.4)	35.21 ± 2.04 (30.16–39.8)	36.37 ± 2.88 (30.16–43.44)	2.66	***0.01***	0.10	0.80
L. gallardoi	FOL	18.74 ± 1.09 (17–20.96)	20.33 ± 1.03 (18.2–22.26)	19.58 ± 1.32 (17.01–22.26)	–4.24	***<0.001***	0.81	0.87
L. gallardoi	TFL	12.69 ± 0.43 (12–13.61)	14.23 ± 0.91 (11.79–15.4)	13.51 ± 1.06 (11.79–15.38)	16.79	***<0.001***	Nonparametric	
L. gallardoi	RUL	7.84 ± 0.4 (7–8.42)	8.66 ± 0.8 (6.6–9.64)	8.28 ± 0.76 (6.6–9.64)	11.68	***<0.001***	Nonparametric	
L. gallardoi	HAL	10.02 ± 0.46 (9.4–10.68)	11.03 ± 0.55 (10.–12.42)	10.56 ± 0.72 (9.39–12.42)	–5.63	***<0.001***	0.47	0.65
L. gallardoi	HH	8.43 ± 0.55 (7.49–9.51)	9.49 ± 0.81 (7.54–10.87)	8.99 ± 0.87 (7.49–10.87)	–4.25	***<0.001***	0.15	0.95
L. gallardoi	HW	11.82 ± 0.74 (10.5–13.2)	13.64 ± 1.19 (11.1–16.3)	12.79 ± 1.35 (10.54–16.3)	–5.11	***<0.001***	0.08	0.98
L. gallardoi	HL	13.81 ± 0.62 (13–15.16)	15.63 ± 1.01 (13.25–17.9)	14.78 ± 1.25 (12.99–17.93)	–6.01	***<0.001***	0.08	0.70
L. gallardoi	RND	2.19 ± 0.19 (1.93–2.58)	2.48 ± 0.25 (2.1–2.9)	2.34 ± 0.27 (1.93–2.9)	–3.7	***<0.001***	0.30	0.22
L. gallardoi	RH	1.2 ± 0.15 (0.97–1.42)	1.4 ± 0.16 (0.98–1.6)	1.3 ± 0.19 (0.97–1.6)	–3.58	***<0.001***	0.78	0.20
L. gallardoi	DRE	6.33 ± 0.28 (5.92–6.84)	6.82 ± 0.39 (6.1–7.57)	6.59 ± 0.42 (5.92–7.57)	–4.01	***<0.001***	0.24	0.58
L. gallardoi	AH	2.58 ± 0.23 (2.16–3)	3 ± 0.26 (2.39–3.47)	2.8 ± 0.32 (2.16–3.47)	–4.86	***<0.001***	0.69	0.90
L. gallardoi	TL	87.71 ± 5.33 (78–96)	96.21 ± 5.48 (88–107)	91.96 ± 6.84 (78–107)	–4.16	***<0.001***	0.92	0.62
Liolaemus sarmientoi	SVL	75.75 ± 7.09 (67–82)	78.86 ± 2.79 (75–84)	77.73 ± 4.71 (67–84)	–1.06	0.32	0.05	0.68
L. sarmientoi	DFH	39.45 ± 6.34 (31.8–46.6)	36.83 ± 2.23 (34.38–41.3)	37.78 ± 4.1 (31.8–46.6)	1.08	0.34	Nonparametric	
L. sarmientoi	FOL	17.43 ± 0.78 (16.7–18.5)	19.23 ± 1.19 (17.88–21)	18.57 ± 1.36 (16.66–20.99)	–2.68	***0.03***	0.53	0.40
L. sarmientoi	TFL	12.92 ± 1.08 (11.9–13.9)	14.41 ± 0.54 (13.8–15.26)	13.87 ± 1.05 (11.86–15.26)	–3.1	***0.01***	0.14	0.29
L. sarmientoi	RUL	7.7 ± 0.67 (7.02–8.62)	8.63 ± 0.54 (8.17–9.75)	8.29 ± 0.73 (7.02–9.75)	–2.52	***0.03***	0.59	0.11
L. sarmientoi	HAL	10.02 ± 0.62 (9.6–10.92)	11.29 ± 0.58 (10.4–12.25)	10.83 ± 0.85 (9.59–12.25)	–3.43	***0.01***	0.79	0.48
L. sarmientoi	HH	8.88 ± 0.5 (8.33–9.31)	9.85 ± 0.44 (8.94–10.3)	9.49 ± 0.66 (8.33–10.3)	–3.33	***0.01***	0.72	0.20
L. sarmientoi	HW	11.98 ± 0.72 (11.4–12.9)	14.04 ± 0.74 (13–14.95)	13.29 ± 1.25 (11.38–14.95)	–4.5	***<0.001***	0.94	0.13
L. sarmientoi	HL	14.17 ± 1.07 (12.9–15.2)	16.27 ± 0.55 (15.38–17)	15.5 ± 1.28 (12.91–16.97)	–4.36	***<0.001***	0.16	0.70
L. sarmientoi	RND	2.44 ± 0.16 (2.31–2.67)	2.53 ± 0.19 (2.22–2.78)	2.5 ± 0.18 (2.22–2.78)	–0.82	0.44	0.85	0.79
L. sarmientoi	RH	1.07 ± 0.23 (0.82–1.3)	1.26 ± 0.18 (0.89–1.41)	1.19 ± 0.21 (0.82–1.41)	0.57	0.14	0.54	0.36
L. sarmientoi	DRE	6.03 ± 0.4 (5.62–6.5)	6.51 ± 0.29 (6.12–6.97)	6.33 ± 0.4 (5.62–6.97)	–2.3	***0.05***	0.44	0.28
L. sarmientoi	AH	3.27 ± 0.55 (2.78–3.96)	3.62 ± 0.21 (3.4–3.96)	3.5 ± 0.38 (2.78–3.96)	1.08	0.34	Nonparametric	
L. sarmientoi	TL	77 ± 8.29 (70–89)	89.17 ± 4.4 (83–95)	84.3 ± 8.55 (70–95)	–3.06	***0.02***	0.21	0.51

APPENDIX 6 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-t-test/KW	*p*-HomVar	*p*-SW
Liolaemus scolaroi	SVL	61 ± 0 (61–61)	67.25 ± 14.01 (54–87)	66 ± 12.45 (54–87)	Noteval., *NF* = 1			0.52
L. scolaroi	DFH	29.87 ± 0 (29.87–29.87)	29.58 ± 2.52 (27.23–33.1)	29.64 ± 2.19 (27.23–33.13)	Not eval., *N* F = 1			0.55
L. scolaroi	FOL	16.05 ± 0 (16.05–16.05)	16.43 ± 1.23 (14.66–17.5)	16.35 ± 1.07 (14.66–17.49)	Not eval., *N* F = 1			0.39
L. scolaroi	TFL	10.73 ± 0 (10.73–10.73)	11.09 ± 0.95 (9.67–11.71)	11.01 ± 0.84 (9.67–11.71)	Not eval., *N* F = 1			0.10
L. scolaroi	RUL	6.65 ± 0 (6.65–6.65)	6.68 ± 0.27 (6.45–6.97)	6.68 ± 0.24 (6.45–6.97)	Not eval., *N* F = 1			0.28
L. scolaroi	HAL	8.07 ± 0 (8.07–8.07)	9.42 ± 0.92 (8.43–10.37)	9.15 ± 1 (8.07–10.37)	Not eval., *N* F = 1			0.75
L. scolaroi	HH	7.49 ± 0 (7.49–7.49)	7.81 ± 0.56 (6.98–8.11)	7.75 ± 0.5 (6.98–8.11)	Not eval., *N* F = 1			***0.02***
L. scolaroi	HW	9.91 ± 0 (9.91–9.91)	10.67 ± 1.05 (9.45–11.9)	10.52 ± 0.97 (9.45–11.9)	Not eval., *N* F = 1			>0.99
L. scolaroi	HL	11.98 ± 0 (11.98–11.98)	13.62 ± 0.87 (12.46–14.4)	13.29 ± 1.05 (11.98–14.43)	Not eval., *N* F = 1			0.73
L. scolaroi	RND	1.89 ± 0 (1.89–1.89)	2.5 ± 0.07 (2.41–2.56)	2.38 ± 0.28 (1.89–2.56)	Not eval., *N* F = 1			0.60
L. scolaroi	RH	0.92 ± 0 (0.92–0.92)	1.03 ± 0.08 (0.95–1.11)	1.01 ± 0.09 (0.92–1.11)	Not eval., *N* F = 1			0.28
L. scolaroi	DRE	5.64 ± 0 (5.64–5.64)	6.04 ± 0.35 (5.54–6.33)	5.96 ± 0.35 (5.54–6.33)	Not eval., *N* F = 1			0.38
L. scolaroi	AH	2.52 ± 0 (2.52–2.52)	2.75 ± 0.32 (2.53–3.22)	2.71 ± 0.29 (2.52–3.22)	Not eval., *N* F = 1			0.14
L. scolaroi	TL	79 ± 0 (79–79)	71 ± 9.56 (63–82)	72.6 ± 9.02 (63–82)	Not eval., *N* F = 1			0.39
Liolaemus tari	SVL	82.8 ± 9.23 (69–93)	90.6 ± 13.26 (68–101)	86.7 ± 11.53 (68–101)	−1.08	0.31	0.50	0.11
L. tari	DFH	41.37 ± 5.5 (33.4–48.49)	42.73 ± 6.61 (31.3–47.25)	42.05 ± 5.78 (31.3–48.49)	−0.35	0.73	0.73	0.28
L. tari	FOL	19.86 ± 1.5 (17.57–21.5)	22.39 ± 1.89 (19.13–23.7)	21.12 ± 2.09 (17.57–23.74)	−2.34	***0.05***	0.67	0.09
L. tari	TFL	14.49 ± 1.25 (12.7–15.7)	17.22 ± 1.62 (14.6–18.69)	15.86 ± 1.98 (12.7–18.69)	−2.99	***0.02***	0.63	0.25
L. tari	RUL	9.47 ± 1.01 (8.06–10.44)	10.6 ± 1.03 (8.84–11.45)	10.03 ± 1.13 (8.06–11.45)	−1.75	0.12	0.98	0.05
L. tari	HAL	10.8 ± 0.83 (9.54–11.82)	12.5 ± 1.13 (10.71–13.45)	11.65 ± 1.29 (9.54–13.45)	−2.71	***0.03***	0.56	0.29
L. tari	HH	9.69 ± 1.34 (8.03–11.5)	12.34 ± 2.28 (8.46–14.44)	11.01 ± 2.25 (8.03–14.44)	−2.24	0.06	0.33	0.36
L. tari	HW	13.69 ± 1.33 (12.5–15.4)	18.57 ± 3.07 (13.4–21.46)	16.13 ± 3.41 (12.45–21.46)	−3.26	***0.01***	0.14	0.48
L. tari	HL	17.76 ± 1.81 (14.9–19.6)	21.53 ± 3.05 (16.6–24.25)	19.64 ± 3.09 (14.86–24.25)	−2.38	***0.04***	0.34	0.27
L. tari	RND	2.85 ± 0.3 (2.62–3.36)	3.41 ± 0.76 (2.16–4.02)	3.13 ± 0.62 (2.16–4.02)	−1.51	0.17	0.10	0.18
L. tari	RH	1.36 ± 0.32 (1.09–1.9)	1.46 ± 0.2 (1.13–1.63)	1.41 ± 0.26 (1.09–1.9)	−0.63	0.55	0.41	0.71
L. tari	DRE	10.59 ± 0.99 (9.1–11.87)	12.49 ± 1.45 (10.39–13.8)	11.54 ± 1.54 (9.11–13.8)	−2.41	***0.04***	0.48	0.26
L. tari	AH	3.16 ± 0.24 (2.83–3.39)	3.71 ± 0.59 (2.83–4.34)	3.44 ± 0.51 (2.83–4.34)	−1.9	0.09	0.10	0.93
L. tari	TL	93 ± 18.94 (68–112)	112.5 ± 16.58 (90–130)	102.75 ± 19.5 (68–130)	−1.55	0.17	0.83	0.25
Liolaemus zullyae	SVL	66 ± 0 (66–66)	71 ± 2.89 (66–74)	70.38 ± 3.2 (66–74)	Not eval., *N* F = 1			0.57
L. zullyae	DFH	35.54 ± 0 (35.54–35.54)	31.46 ± 1.16 (30.1–33.45)	31.97 ± 1.8 (30.09–35.54)	Not eval., *N* F = 1			0.64
L. zullyae	FOL	15.61 ± 0 (15.61–15.61)	18.57 ± 1.15 (17.37–20.2)	18.2 ± 1.49 (15.61–20.2)	Not eval., *N* F = 1			0.34
L. zullyae	TFL	11.56 ± 0 (11.56–11.56)	13.36 ± 0.78 (12.26–14.2)	13.13 ± 0.96 (11.56–14.2)	Not eval., *N* F = 1			0.38
L. zullyae	RUL	6.77 ± 0 (6.77–6.77)	7.89 ± 0.43 (7.27–8.42)	7.75 ± 0.56 (6.77–8.42)	Not eval., *N* F = 1			0.47
L. zullyae	HAL	8.81 ± 0 (8.81–8.81)	10.4 ± 0.85 (9.1–11.82)	10.2 ± 0.97 (8.81–11.82)	Not eval., *N* F = 1			0.83
L. zullyae	HH	8.1 ± 0 (8.1–8.1)	9.47 ± 0.75 (8.22–10.73)	9.3 ± 0.85 (8.1–10.73)	Not eval., *N* F = 1			0.76
L. zullyae	HW	10.82 ± 0 (10.82–10.82)	13.13 ± 0.8 (11.48–14)	12.84 ± 1.1 (10.82–14)	Not eval., *N* F = 1			0.11
L. zullyae	HL	13.46 ± 0 (13.46–13.46)	15.81 ± 0.81 (14.6–16.84)	15.52 ± 1.12 (13.46–16.84)	Not eval., *N* F = 1			0.62
L. zullyae	RND	2.37 ± 0 (2.37–2.37)	2.83 ± 0.22 (2.53–3.27)	2.77 ± 0.26 (2.37–3.27)	Not eval., *N* F = 1			0.22
L. zullyae	RH	1.03 ± 0 (1.03–1.03)	1.19 ± 0.13 (1.03–1.46)	1.17 ± 0.14 (1.03–1.46)	Not eval., *N* F = 1			0.30
L. zullyae	DRE	6.1 ± 0 (6.1–6.1)	6.99 ± 0.42 (6.47–7.6)	6.88 ± 0.5 (6.1–7.6)	Not eval., *N* F = 1			0.41
L. zullyae	AH	2.53 ± 0 (2.53–2.53)	3.02 ± 0.2 (2.75–3.2)	2.96 ± 0.25 (2.53–3.2)	Not eval., *N* F = 1			0.08
L. zullyae	TL	74 ± 0 (74–74)	90.33 ± 7.2 (82–101)	88 ± 9.02 (74–101)	Not eval., N F = 1			0.67

APPENDIX 6 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-t-test/KW	*p*-HomVar	*p*-SW
Liolaemus baguali	SVL	77.33 ± 6.92 (68–87)	82.67 ± 4.41 (75–87)	80 ± 6.19 (68–87)	–1.59	0.14	0.35	0.84
L. baguali	DFH	37.92 ± 4.45 (32.1–42.4)	37.49 ± 3.54 (31.83–42)	37.7 ± 3.84 (31.83–42.43)	0.18	0.86	0.62	0.11
L. baguali	FOL	18.95 ± 1.26 (17.8–21.3)	21.37 ± 0.65 (20.27–22.3)	20.16 ± 1.59 (17.75–22.3)	–4.2	***<0.001***	0.17	0.21
L. baguali	TFL	13.94 ± 0.81 (12.8–14.8)	15.28 ± 0.77 (14.33–16.1)	14.61 ± 1.03 (12.84–16.12)	–2.96	***0.01***	0.91	0.04
L. baguali	RUL	8.3 ± 0.89 (6.98–9.04)	9.08 ± 0.81 (8.13–10.38)	8.69 ± 0.9 (6.98–10.38)	–1.59	0.14	0.85	0.61
L. baguali	HAL	11.15 ± 0.74 (10.4–12.4)	12.43 ± 0.27 (12.18–12.9)	11.79 ± 0.85 (10.36–12.92)	5.39	***0.02***	Nonparametric	
L. baguali	HH	8.56 ± 0.75 (7.31–9.62)	9.79 ± 1.01 (8.17–10.72)	9.17 ± 1.06 (7.31–10.72)	–2.38	***0.04***	0.54	0.31
L. baguali	HW	13.42 ± 1.6 (11.1–15.98)	15.39 ± 1.49 (12.96–17.3)	14.4 ± 1.79 (11.1–17.3)	–2.21	0.06	0.88	0.70
L. baguali	HL	15.68 ± 1.37 (13.5–17.7)	18.43 ± 0.93 (17.17–19.6)	17.06 ± 1.82 (13.52–19.63)	–4.07	***<0.001***	0.41	1.00
L. baguali	RND	2.39 ± 0.25 (2.07–2.68)	2.67 ± 0.78 (1.13–3.32)	2.53 ± 0.57 (1.13–3.32)	3.69	0.07	Nonparametric	
L. baguali	RH	1.18 ± 0.16 (1.04–1.46)	1.29 ± 0.17 (1.09–1.53)	1.23 ± 0.17 (1.04–1.53)	–1.16	0.27	0.89	0.23
L. baguali	DRE	8.27 ± 2.11 (5.89–10.8)	9.41 ± 2.09 (7.24–11.71)	8.84 ± 2.09 (5.89–11.71)	2.08	0.18	Nonparametric	
L. baguali	AH	3.1 ± 0.53 (2.13–3.66)	3.55 ± 0.45 (2.9–4)	3.32 ± 0.53 (2.13–4)	–1.61	0.14	0.72	0.31
L. baguali	TL	87 ± 14 (71–97)	98.75 ± 13.5 (80–112)	93.71 ± 14 (71–112)	–1.12	0.31	0.89	0.15
Liolaemus kingii	SVL	71.8 ± 5.67 (62–80)	75.07 ± 6.18 (65–86)	73.71 ± 6.08 (62–86)	–1.32	0.20	0.81	0.23
L. kingii	DFH	39.04 ± 3.1 (34.39–44.1)	36.43 ± 3.75 (30.9–43.63)	37.52 ± 3.67 (30.9–44.1)	1.8	0.09	0.57	0.53
L. kingii	FOL	16.82 ± 1.03 (15.1–18)	18.32 ± 0.72 (17.1–19.59)	17.69 ± 1.13 (15.1–19.59)	–4.2	***<0.001***	0.25	0.14
L. kingii	TFL	11.89 ± 0.81 (10.6–13.4)	13.76 ± 1.25 (11.35–15.6)	12.98 ± 1.43 (10.61–15.61)	–4.16	***<0.001***	0.20	0.79
L. kingii	RUL	7.49 ± 0.82 (6.28–8.58)	8.46 ± 0.86 (6.74–10.29)	8.06 ± 0.96 (6.28–10.29)	–2.78	***0.01***	0.89	0.84
L. kingii	HAL	9.45 ± 0.49 (8.62–10)	10.37 ± 0.54 (9.52–11.23)	9.98 ± 0.69 (8.62–11.23)	–4.28	***<0.001***	0.79	0.21
L. kingii	HH	8.3 ± 0.52 (7.81–9.52)	9.74 ± 0.89 (8.25–11.56)	9.14 ± 1.04 (7.81–11.56)	–4.57	***<0.001***	0.12	0.58
L. kingii	HW	11.33 ± 0.85 (10.4–12.7)	13.11 ± 1.68 (9.11–14.97)	12.37 ± 1.63 (9.11–14.97)	8.57	***<0.001***	Nonparametric	
L. kingii	HL	14.39 ± 1.33 (12.5–16.6)	16.52 ± 1.15 (14.57–18.3)	15.63 ± 1.61 (12.47–18.31)	–4.19	***<0.001***	0.62	0.16
L. kingii	RND	2.09 ± 0.21 (1.65–2.46)	2.51 ± 0.25 (2.13–2.94)	2.34 ± 0.31 (1.65–2.94)	–4.29	***<0.001***	0.63	0.65
L. kingii	RH	0.99 ± 0.18 (0.72–1.3)	1.2 ± 0.25 (0.87–1.87)	1.11 ± 0.25 (0.72–1.87)	–2.23	***0.04***	0.34	0.29
L. kingii	DRE	5.76 ± 0.4 (5.21–6.33)	6.66 ± 0.47 (5.87–7.36)	6.28 ± 0.62 (5.21–7.36)	–4.9	***<0.001***	0.62	0.20
L. kingii	AH	3.21 ± 0.42 (2.41–3.88)	3.54 ± 0.27 (3.08–4.02)	3.4 ± 0.37 (2.41–4.02)	–2.37	***0.03***	0.12	0.95
L. kingii	TL	83.5 ± 7.4 (72–91)	84 ± 11.01 (69–102)	83.81 ± 9.54 (69–102)	–0.1	0.92	0.40	0.49
Liolaemus somuncurae	SVL	78.33 ± 7.89 (68–91)	81.6 ± 6.1 (67–88)	80.38 ± 6.76 (67–91)	–0.93	0.37	0.47	0.78
L. somuncurae	DFH	38.26 ± 3.49 (34.7–42.9)	37.15 ± 2.44 (31.67–40)	37.56 ± 2.82 (31.67–42.87)	0.76	0.46	0.33	0.78
L. somuncurae	FOL	17.85 ± 0.55 (17–18.6)	19.81 ± 1.04 (17.85–21.5)	19.08 ± 1.31 (16.97–21.49)	–4.24	***<0.001***	0.17	0.95
L. somuncurae	TFL	13.39 ± 0.38 (12.93–14)	14.93 ± 0.89 (12.9–16.12)	14.35 ± 1.05 (12.92–16.12)	–3.98	***<0.001***	0.08	0.39
L. somuncurae	RUL	8.46 ± 1.09 (6.83–9.91)	9.18 ± 0.73 (7.96–10.4)	8.91 ± 0.92 (6.83–10.4)	–1.6	0.13	0.29	0.79
L. somuncurae	HAL	10.4 ± 0.55 (9.45–10.85)	11.92 ± 0.63 (11.05–13.1)	11.35 ± 0.96 (9.45–13.14)	–4.9	***<0.001***	0.79	0.61
L. somuncurae	HH	9.43 ± 0.45 (8.73–10.1)	10.17 ± 0.83 (8.93–11.98)	9.89 ± 0.79 (8.73–11.98)	–1.99	0.07	0.20	0.82
L. somuncurae	HW	13.12 ± 1 (11.6–14.5)	14.64 ± 1.12 (12.1–15.85)	14.07 ± 1.29 (11.6–15.85)	–2.73	***0.02***	0.85	0.34
L. somuncurae	HL	16.67 ± 1.48 (14.74–19)	18.32 ± 1.18 (15.5–19.74)	17.7 ± 1.5 (14.74–19.74)	–2.47	***0.03***	0.52	0.93
L. somuncurae	RND	2.73 ± 0.13 (2.48–2.85)	2.99 ± 0.22 (2.6–3.29)	2.89 ± 0.23 (2.48–3.29)	–2.63	***0.02***	0.23	0.66
L. somuncurae	RH	1.19 ± 0.15 (0.98–1.38)	1.41 ± 0.17 (1.2–1.73)	1.33 ± 0.19 (0.98–1.73)	–2.62	***0.02***	0.81	0.38
L. somuncurae	DRE	10.02 ± 0.43 (9.3–10.65)	11.2 ± 0.6 (9.82–11.8)	10.76 ± 0.79 (9.31–11.8)	–4.22	***<0.001***	0.49	0.14
L. somuncurae	AH	2.98 ± 0.2 (2.75–3.28)	3.29 ± 0.42 (2.57–3.95)	3.17 ± 0.38 (2.57–3.95)	–1.65	0.12	0.12	0.81
L. somuncurae	TL	85.67 ± 3.51 (82–89)	86.33 ± 11.36 (71–102)	86.11 ± 9.16 (71–102)	–0.1	0.93	0.18	0.96

APPENDIX 6 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-t-test/KW	*p*-HomVar	*p*-SW
Liolaemus tristis	SVL	67.78 ± 3.15 (63–73)	74 ± 4.05 (66–79)	71.2 ± 4.79 (63–79)	–3.76	***<0.001***	0.49	0.47
L. tristis	DFH	37.34 ± 1.84 (34.4–40.9)	34.83 ± 2.29 (31.85–38.1)	35.96 ± 2.41 (31.85–40.92)	2.66	***0.02***	0.55	0.23
L. tristis	FOL	16.56 ± 1.12 (14.7–17.9)	19.14 ± 1.33 (17–21.22)	17.98 ± 1.79 (14.71–21.22)	–4.62	***<0.001***	0.64	0.50
L. tristis	TFL	11.62 ± 0.37 (11.1–12.1)	14.07 ± 0.73 (12.79–15.2)	12.96 ± 1.38 (11.13–15.24)	14.14	***<0.001***	0.06	0.97
L. tristis	RUL	7.07 ± 0.47 (6.38–7.65)	8.39 ± 0.68 (7.4–9.18)	7.8 ± 0.89 (6.38–9.18)	–4.91	***<0.001***	0.31	0.08
L. tristis	HAL	8.98 ± 0.49 (8.4–9.95)	10.59 ± 0.81 (9.12–12.11)	9.86 ± 1.06 (8.4–12.11)	–5.21	***<0.001***	0.16	0.93
L. tristis	HH	7.51 ± 0.74 (6.26–8.7)	9.53 ± 0.88 (7.94–10.58)	8.62 ± 1.31 (6.26–10.58)	–5.48	***<0.001***	0.63	0.33
L. tristis	HW	10.86 ± 0.72 (9.38–11.9)	13.32 ± 1.37 (10.43–14.8)	12.21 ± 1.67 (9.38–14.84)	–4.85	***<0.001***	0.08	0.23
L. tristis	HL	13.15 ± 0.47 (12.2–13.8)	15.81 ± 1.07 (14.1–17.25)	14.61 ± 1.59 (12.2–17.25)	14.14	***<0.001***	Nonparametric	
L. tristis	RND	1.98 ± 0.13 (1.72–2.16)	2.38 ± 0.25 (2.09–2.91)	2.2 ± 0.28 (1.72–2.91)	–4.27	***<0.001***	0.09	0.35
L. tristis	RH	1.08 ± 0.11 (0.96–1.28)	1.24 ± 0.19 (0.88–1.53)	1.16 ± 0.18 (0.88–1.53)	–2.2	***0.04***	0.14	0.96
L. tristis	DRE	5.74 ± 0.51 (4.99–6.75)	6.67 ± 0.4 (5.91–7.17)	6.25 ± 0.65 (4.99–7.17)	–4.57	***<0.001***	0.46	0.76
L. tristis	AH	2.73 ± 0.25 (2.45–3.31)	3.11 ± 0.31 (2.6–3.51)	2.94 ± 0.34 (2.45–3.51)	–2.98	***0.01***	0.57	0.90
L. tristis	TL	79 ± 11.01 (59–91)	83.67 ± 11.96 (66–96)	81.8 ± 11.43 (59–96)	1	0.34	Nonparametric	
Liolaemus uptoni	SVL	66.25 ± 0.96 (65–67)	75.67 ± 10.17 (60–85)	71.9 ± 9.02 (60–85)	1.38	0.29	Nonparametric	
L. uptoni	DFH	34.28 ± 1.55 (32.–35.37)	36.55 ± 5.38 (28.56–42.4)	35.64 ± 4.27 (28.56–42.4)	–0.81	0.44	0.07	0.68
L. uptoni	FOL	16.69 ± 0.84 (15.7–17.8)	18.02 ± 1.7 (15.35–19.98)	17.49 ± 1.52 (15.35–19.98)	–1.42	0.19	0.27	0.91
L. uptoni	TFL	11.92 ± 0.57 (11.4–12.7)	13.78 ± 1.55 (11.7–15.16)	13.04 ± 1.54 (11.37–15.16)	2.91	0.05	0.13	0.23
L. uptoni	RUL	8.28 ± 0.28 (7.88–8.55)	8.96 ± 1 (7.67–10.14)	8.69 ± 0.84 (7.67–10.14)	–1.31	0.23	0.06	0.57
L. uptoni	HAL	9.71 ± 0.45 (9.15–10.24)	10.63 ± 1.06 (8.85–11.84)	10.26 ± 0.96 (8.85–11.84)	–1.61	0.15	0.18	0.80
L. uptoni	HH	8.04 ± 0.17 (7.8–8.18)	10.92 ± 2.58 (7.98–14.7)	9.77 ± 2.44 (7.8–14.7)	1.64	***0.25***	Nonparametric	
L. uptoni	HW	11.68 ± 0.28 (11.35–12)	13.27 ± 2.34 (10.4–15.79)	12.63 ± 1.94 (10.39–15.79)	0.73	0.47	Nonparametric	
L. uptoni	HL	15.11 ± 0.39 (14.8–15.7)	18.16 ± 2.18 (15.14–19.7)	16.94 ± 2.27 (14.8–19.73)	4.55	***0.04***	Nonparametric	
L. uptoni	RND	2.61 ± 0.13 (2.5–2.77)	2.83 ± 0.47 (2.2–3.39)	2.74 ± 0.38 (2.2–3.39)	–0.89	0.40	0.05	0.67
L. uptoni	RH	1.05 ± 0.11 (0.95–1.18)	1.21 ± 0.23 (0.85–1.45)	1.14 ± 0.2 (0.85–1.45)	–1.25	0.25	0.28	0.64
L. uptoni	DRE	9.1 ± 0.23 (8.85–9.4)	10.65 ± 1.29 (8.94–11.79)	10.03 ± 1.26 (8.85–11.79)	2.33	0.17	Nonparametric	
L. uptoni	AH	2.82 ± 0.11 (2.68–2.94)	3.49 ± 0.56 (2.65–4.14)	3.22 ± 0.55 (2.65–4.14)	2.91	0.11	Nonparametric	
L. uptoni	TL	79.5 ± 16.74 (55–92)	88.4 ± 15.63 (65–105)	84.44 ± 15.79 (55–105)	–0.82	0.44	0.86	0.11
Liolaemus avilae	SVL	55.75 ± 2.5 (53–59)	53.2 ± 4.15 (48–59)	54.33 ± 3.57 (48–59)	1.07	0.32	0.43	0.99
L. avilae	DFH	27.08 ± 2.79 (23.1–29.5)	22.92 ± 3.01 (19.4–26.9)	24.77 ± 3.5 (19.4–29.5)	2.12	0.07	0.94	0.61
L. avilae	FOL	13.88 ± 0.53 (13.3–14.6)	14.88 ± 1.12 (13.1–15.98)	14.44 ± 1.01 (13.08–15.98)	–1.65	0.14	0.26	0.66
L. avilae	TFL	9.58 ± 0.58 (8.73–10.06)	10.29 ± 0.5 (9.79–11.08)	9.97 ± 0.63 (8.73–11.08)	–1.95	0.09	0.76	0.97
L. avilae	RUL	5.24 ± 0.36 (4.91–5.58)	5.89 ± 0.73 (4.89–6.81)	5.6 ± 0.66 (4.89–6.81)	–1.59	0.15	0.28	0.89
L. avilae	HAL	7.75 ± 0.42 (7.27–8.3)	7.88 ± 0.51 (7.27–8.48)	7.82 ± 0.45 (7.27–8.48)	–0.41	0.69	0.79	0.38
L. avilae	HH	6.54 ± 0.36 (6.18–7.03)	7.08 ± 0.67 (6.2–7.67)	6.84 ± 0.59 (6.18–7.67)	–1.44	0.19	0.33	0.38
L. avilae	HW	9.2 ± 0.12 (9.04–9.33)	9.6 ± 0.62 (8.89–10.19)	9.42 ± 0.49 (8.89–10.19)	0.24	0.73	Nonparametric	
L. avilae	HL	10.91 ± 0.33 (10.4–11.2)	11.98 ± 0.71 (11.01–12.9)	11.5 ± 0.78 (10.43–12.9)	–2.76	***0.03***	0.25	>0.99
L. avilae	RND	1.97 ± 0.21 (1.74–2.25)	1.93 ± 0.19 (1.69–2.16)	1.95 ± 0.19 (1.69–2.25)	0.33	0.75	0.84	0.34
L. avilae	RH	0.77 ± 0.23 (0.51–1.06)	0.76 ± 0.25 (0.55–1.09)	0.76 ± 0.22 (0.51–1.09)	0.06	0.95	0.92	0.18
L. avilae	DRE	4.65 ± 0.21 (4.42–4.89)	4.95 ± 0.2 (4.64–5.2)	4.82 ± 0.25 (4.42–5.2)	–2.14	0.07	0.88	0.61
L. avilae	AH	1.8 ± 0.12 (1.68–1.96)	1.99 ± 0.36 (1.6–2.56)	1.9 ± 0.28 (1.6–2.56)	–1	0.35	0.10	0.60
L. avilae	TL	65.75 ± 5.12 (61–73)	70.6 ± 4.34 (67–77)	68.44 ± 5.08 (61–77)	–1.54	0.17	0.73	0.11

APPENDIX 6 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-t-test/KW	*p*-HomVar	*p*-SW
Liolaemus hatcheri	SVL	63.33 ± 3.83 (58–69)	61.17 ± 4.45 (55–69)	61.89 ± 4.27 (55–69)	1.02	0.32	0.78	0.31
L. hatcheri	DFH	33.02 ± 1.82 (30.1–35.3)	26.92 ± 2.95 (19.5–31.6)	28.95 ± 3.92 (19.5–35.3)	4.61	***<0.001***	0.30	0.43
L. hatcheri	FOL	14.38 ± 0.96 (13.5–15.9)	15.35 ± 0.68 (14.01–16.3)	15.02 ± 0.89 (13.5–16.3)	–2.49	***0.02***	0.31	0.85
L. hatcheri	TFL	8.8 ± 1.15 (6.73–9.71)	8.62 ± 1.55 (5.06–10.47)	8.68 ± 1.4 (5.06–10.47)	0.25	0.80	0.53	0.32
L. hatcheri	RUL	6.02 ± 0.29 (5.67–6.49)	6.66 ± 0.44 (6.15–7.33)	6.44 ± 0.5 (5.67–7.33)	–3.24	***0.01***	0.38	0.05
L. hatcheri	HAL	8.83 ± 0.3 (8.52–9.24)	9.31 ± 0.59 (8.5–10.57)	9.15 ± 0.56 (8.5–10.57)	–1.83	0.09	0.14	0.44
L. hatcheri	HH	7.04 ± 0.45 (6.31–7.56)	7.65 ± 0.59 (6.41–8.42)	7.45 ± 0.61 (6.31–8.42)	–2.23	***0.04***	0.56	0.37
L. hatcheri	HW	10.77 ± 0.78 (9.7–11.94)	11.44 ± 0.96 (9.95–13.05)	11.22 ± 0.94 (9.7–13.05)	–1.5	0.15	0.69	0.66
L. hatcheri	HL	12.33 ± 0.56 (11.4–13)	13.29 ± 0.91 (12.1–14.65)	12.97 ± 0.92 (11.43–14.65)	–2.34	***0.03***	0.29	0.19
L. hatcheri	RND	2.21 ± 0.17 (1.97–2.48)	2.3 ± 0.1 (2.11–2.48)	2.27 ± 0.13 (1.97–2.48)	–1.35	0.20	0.17	0.92
L. hatcheri	RH	0.97 ± 0.15 (0.79–1.19)	1 ± 0.09 (0.85–1.13)	0.99 ± 0.11 (0.79–1.19)	–0.51	0.62	0.18	0.85
L. hatcheri	DRE	5.32 ± 0.36 (4.78–5.84)	5.73 ± 0.36 (5.24–6.41)	5.59 ± 0.4 (4.78–6.41)	–2.3	***0.04***	0.88	0.54
L. hatcheri	AH	2.02 ± 0.21 (1.85–2.33)	2.22 ± 0.21 (1.91–2.61)	2.15 ± 0.22 (1.85–2.61)	–1.89	0.08	0.95	0.49
L. hatcheri	TL	57.33 ± 4.73 (52–61)	68.67 ± 7.81 (55–78)	64.89 ± 8.71 (52–78)	–2.27	0.06	0.58	0.77
Liolaemus kolengh	SVL	54.92 ± 4.21 (48–62)	58.27 ± 2.58 (53–62)	56.78 ± 3.73 (48–62)	–2.55	***0.02***	0.09	0.62
L. kolengh	DFH	26.16 ± 3.11 (20.7–31.1)	24.83 ± 1.99 (20.7–28.4)	25.42 ± 2.58 (20.7–31.1)	1.35	0.19	0.12	0.95
L. kolengh	FOL	14.21 ± 0.61 (13.5–15.3)	15.54 ± 0.66 (14.31–16.3)	14.94 ± 0.92 (13.48–16.3)	13.39	***<0.001***	0.78	0.40
L. kolengh	TFL	9.1 ± 0.71 (7.55–10.28)	10.25 ± 0.47 (9.3–10.92)	9.74 ± 0.82 (7.55–10.92)	–5.11	***<0.001***	0.15	0.92
L. kolengh	RUL	5.6 ± 0.61 (4.6–6.56)	6.45 ± 0.39 (5.84–7.03)	6.07 ± 0.65 (4.6–7.03)	–4.37	***<0.001***	0.11	0.63
L. kolengh	HAL	9.07 ± 0.36 (8.31–9.6)	10.03 ± 0.46 (9.46–11.12)	9.59 ± 0.64 (8.31–11.12)	–5.81	***<0.001***	0.43	0.83
L. kolengh	HH	6.35 ± 0.45 (5.71–7.31)	7.05 ± 0.37 (6.11–7.5)	6.74 ± 0.53 (5.71–7.5)	–4.42	***<0.001***	0.52	0.91
L. kolengh	HW	9.93 ± 0.78 (8.95–11.28)	11.17 ± 0.58 (9.76–11.71)	10.62 ± 0.91 (8.95–11.71)	12.17	***<0.001***	0.29	0.64
L. kolengh	HL	11.22 ± 0.59 (10.2–12.2)	12.52 ± 0.43 (11.7–13.17)	11.94 ± 0.83 (10.18–13.17)	–6.61	***<0.001***	0.28	0.82
L. kolengh	RND	2.02 ± 0.17 (1.74–2.3)	2.23 ± 0.13 (1.99–2.41)	2.14 ± 0.18 (1.74–2.41)	–3.62	***<0.001***	0.32	0.72
L. kolengh	RH	0.99 ± 0.09 (0.84–1.11)	1.05 ± 0.08 (0.91–1.2)	1.02 ± 0.09 (0.84–1.2)	–2	0.06	0.78	0.17
L. kolengh	DRE	4.98 ± 0.3 (4.56–5.58)	5.56 ± 0.21 (5.13–5.89)	5.31 ± 0.39 (4.56–5.89)	–5.91	***<0.001***	0.17	0.50
L. kolengh	AH	2 ± 0.24 (1.69–2.43)	2.33 ± 0.3 (1.63–2.95)	2.18 ± 0.32 (1.63–2.95)	–3.09	***<0.001***	0.42	1.00
L. kolengh	TL	57.89 ± 3.1 (53–62)	65.17 ± 3.79 (60–70)	62.05 ± 5.03 (53–70)	11.16	***<0.001***	Nonparametric	
Liolaemus lineomaculatus	SVL	56.75 ± 1.89 (54–58)	56.17 ± 1.17 (55–58)	56.4 ± 1.43 (54–58)	0.61	0.56	0.33	0.67
L. lineomaculatus	DFH	27.35 ± 1.65 (25.6–28.9)	24.1 ± 0.72 (23.1–24.9)	25.4 ± 2 (23.1–28.9)	4.36	***<0.001***	0.10	0.66
L. lineomaculatus	FOL	13.71 ± 0.59 (13.–14.46)	14.83 ± 0.75 (13.99–16.1)	14.38 ± 0.87 (13.05–16.1)	–2.5	***0.04***	0.74	0.65
L. lineomaculatus	TFL	9.46 ± 0.59 (8.65–10.06)	10.69 ± 0.58 (9.79–11.24)	10.2 ± 0.84 (8.65–11.24)	–3.24	***0.01***	0.91	0.06
L. lineomaculatus	RUL	5.63 ± 0.21 (5.4–5.91)	6.49 ± 0.22 (6.08–6.7)	6.14 ± 0.49 (5.4–6.7)	–6.15	***<0.001***	0.99	0.82
L. lineomaculatus	HAL	7.63 ± 0.5 (7.1–8.3)	8.49 ± 0.32 (8.17–8.89)	8.14 ± 0.58 (7.1–8.89)	–3.32	***0.01***	0.36	0.73
L. lineomaculatus	HH	6.95 ± 0.17 (6.79–7.17)	7.44 ± 0.28 (7.15–7.87)	7.24 ± 0.34 (6.79–7.87)	–3.09	***0.01***	0.42	0.56
L. lineomaculatus	HW	9.63 ± 0.42 (9.1–10.13)	10.11 ± 0.29 (9.83–10.55)	9.92 ± 0.41 (9.1–10.55)	–2.13	0.07	0.45	0.63
L. lineomaculatus	HL	11.65 ± 0.31 (11.35–12)	12.08 ± 0.45 (11.26–12.5)	11.91 ± 0.44 (11.26–12.5)	–1.66	0.14	0.59	0.42
L. lineomaculatus	RND	2 ± 0.07 (1.89–2.04)	2.22 ± 0.21 (1.98–2.5)	2.13 ± 0.2 (1.89–2.5)	–2.05	0.07	0.11	0.78
L. lineomaculatus	RH	0.89 ± 0.09 (0.77–0.99)	1 ± 0.07 (0.93–1.1)	0.95 ± 0.09 (0.77–1.1)	–2.19	0.06	0.49	0.66
L. lineomaculatus	DRE	4.86 ± 0.21 (4.64–5.14)	5.16 ± 0.24 (4.91–5.52)	5.04 ± 0.27 (4.64–5.52)	–2.03	0.08	0.91	0.20
L. lineomaculatus	AH	1.85 ± 0.21 (1.56–2.05)	1.86 ± 0.23 (1.63–2.23)	1.86 ± 0.21 (1.56–2.23)	–0.1	0.93	0.93	0.65
L. lineomaculatus	TL	71 ± 2 (70–74)	77.5 ± 4.2 (73–82)	74.25 ± 4.62 (70–82)	–2.79	***0.03***	0.25	0.57

APPENDIX 6 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-t-test/KW	*p*-HomVar	*p*-SW
Liolaemus morandae	SVL	57 ± 4.24 (52–61)	53 ± 4.24 (50–56)	55.67 ± 4.32 (50–61)	1.09	0.34	0.78	0.19
L. morandae	DFH	28.23 ± 2.84 (24.3–30.8)	21.25 ± 2.19 (19.7–22.8)	25.9 ± 4.33 (19.7–30.8)	2.99	***0.04***	0.99	0.58
L. morandae	FOL	14.48 ± 0.88 (13.4–15.2)	15.73 ± 1.52 (14.65–16.8)	14.9 ± 1.16 (13.42–16.8)	–1.34	0.25	0.37	0.10
L. morandae	TFL	8.41 ± 0.87 (7.57–9.62)	10.47 ± 0.13 (10.4–10.56)	9.1 ± 1.26 (7.57–10.56)	–3.12	***0.04***	0.22	0.64
L. morandae	RUL	5.21 ± 0.41 (4.69–5.56)	5.54 ± 0.03 (5.52–5.56)	5.32 ± 0.36 (4.69–5.56)	1.34	0.34	0.10	0.66
L. morandae	HAL	7.53 ± 0.6 (6.69–8.06)	8.44 ± 1 (7.73–9.14)	7.83 ± 0.79 (6.69–9.14)	–1.46	0.22	0.39	0.31
L. morandae	HH	7.13 ± 0.74 (6.52–8.21)	7.41 ± 0.68 (6.93–7.89)	7.23 ± 0.67 (6.52–8.21)	–0.44	0.68	0.86	0.31
L. morandae	HW	9.78 ± 0.64 (9.08–10.58)	9.97 ± 0.78 (9.41–10.52)	9.84 ± 0.61 (9.08–10.58)	–0.31	0.77	0.61	0.53
L. morandae	HL	11.75 ± 0.63 (11–12.49)	12.4 ± 0.94 (11.73–13.06)	11.96 ± 0.72 (10.96–13.06)	–1.05	0.35	0.46	0.29
L. morandae	RND	2.12 ± 0.06 (2.04–2.17)	2.22 ± 0.28 (2.02–2.42)	2.15 ± 0.14 (2.02–2.42)	0	>0.99	Nonparametric	
L. morandae	RH	1.05 ± 0.16 (0.84–1.18)	1.01 ± 0.07 (0.96–1.06)	1.04 ± 0.13 (0.84–1.18)	0.32	0.77	0.61	0.39
L. morandae	DRE	4.97 ± 0.22 (4.78–5.27)	5.31 ± 0.21 (5.16–5.45)	5.08 ± 0.26 (4.78–5.45)	–1.8	0.15	0.83	0.42
L. morandae	AH	1.76 ± 0.11 (1.6–1.86)	2.35 ± 0.13 (2.26–2.44)	1.95 ± 0.32 (1.6–2.44)	–5.82	***<0.001***	0.70	0.35
L. morandae	TL	66 ± 7.07 (61–71)	79 ± 0 (79–79)	70.33 ± 9.02 (61–79)	Not eval., *N* F = 1			>0.99
Liolaemus silvanae	SVL	72 ± 4.66 (65–78)	73.89 ± 2.37 (70–78)	73 ± 3.64 (65–78)	–1.07	0.30	0.08	0.71
L. silvanae	DFH	34.25 ± 4.06 (28.1–39.7)	30.71 ± 3.16 (25.1–35.1)	32.38 ± 3.94 (25.1–39.7)	2.02	0.06	0.50	0.49
L. silvanae	FOL	17.75 ± 0.71 (16.5–18.6)	19.1 ± 0.57 (18.1–20.1)	18.46 ± 0.93 (16.5–20.1)	–4.33	***<0.001***	0.56	0.80
L. silvanae	TFL	13.23 ± 1.5 (11.8–16.68)	13.94 ± 0.34 (13.47–14.5)	13.6 ± 1.09 (11.77–16.68)	6.75	***0.01***	Nonparametric	
L. silvanae	RUL	7.36 ± 0.49 (6.83–8.12)	8.02 ± 0.54 (7.04–8.82)	7.71 ± 0.6 (6.83–8.82)	–2.62	***0.02***	0.84	0.58
L. silvanae	HAL	12.01 ± 0.93 (10.8–13.8)	12.42 ± 0.93 (10.65–13.)	12.23 ± 0.92 (10.65–13.76)	–0.92	0.37	0.98	0.99
L. silvanae	HH	7.73 ± 0.52 (6.74–8.41)	8.57 ± 0.32 (8.16–9.06)	8.17 ± 0.6 (6.74–9.06)	–4.09	***<0.001***	0.21	0.48
L. silvanae	HW	12.3 ± 0.86 (11.3–13.69)	13.88 ± 0.49 (13.02–14.7)	13.14 ± 1.05 (11.31–14.71)	–4.72	***<0.001***	0.14	0.71
L. silvanae	HL	13.59 ± 0.85 (12.5–15)	15.16 ± 0.49 (14.63–15.9)	14.42 ± 1.04 (12.47–15.9)	–4.77	***<0.001***	0.14	0.67
L. silvanae	RND	2.24 ± 0.16 (2.08–2.54)	2.5 ± 0.13 (2.26–2.73)	2.38 ± 0.19 (2.08–2.73)	–3.56	***<0.001***	0.58	0.64
L. silvanae	RH	1.21 ± 0.1 (1.09–1.35)	1.18 ± 0.1 (1.01–1.33)	1.19 ± 0.1 (1.01–1.35)	0.6	0.56	1.00	0.30
L. silvanae	DRE	5.9 ± 0.33 (5.47–6.43)	5.79 ± 1.95 (0.64–6.88)	5.84 ± 1.4 (0.64–6.88)	4.69	***0.03***	Nonparametric	
L. silvanae	AH	2.37 ± 0.23 (1.95–2.66)	2.7 ± 0.18 (2.49–2.95)	2.54 ± 0.26 (1.95–2.95)	–3.26	***0.01***	0.45	0.40
L. silvanae	TL	74.6 ± 2.41 (72–78)	78.67 ± 4.62 (76–84)	76.13 ± 3.72 (72–84)	–1.68	0.14	0.25	0.10

APPENDIX 6 *Continued*

Species	Variable	Females	Males	All	Statistic	*p*-t-test/KW	*p*-HomVar	*p*-SW
Liolaemus caparensis	SVL	49.8 ± 2.77 (47–54)	55 ± 3.61 (52–59)	51.75 ± 3.92 (47–59)	–2.31	0.06	0.59	0.12
L. caparensis	DFH	23.84 ± 1.62 (21.2–25.2)	24.87 ± 0.93 (24.1–25.9)	24.23 ± 1.43 (21.2–25.9)	–0.98	0.36	0.52	0.28
L. caparensis	FOL	12.52 ± 0.71 (11.4–13.2)	14.99 ± 0.44 (14.68–15.3)	13.23 ± 1.35 (11.37–15.3)	–4.44	***0.01***	0.86	0.42
L. caparensis	TFL	6.86 ± 0.55 (6.19–7.55)	7.86 ± 0.72 (7.19–8.62)	7.24 ± 0.77 (6.19–8.62)	–2.23	0.07	0.59	0.20
L. caparensis	RUL	5.08 ± 0.44 (4.58–5.66)	5.51 ± 0.12 (5.38–5.61)	5.24 ± 0.4 (4.58–5.66)	–1.62	0.16	0.14	0.99
L. caparensis	HAL	7.55 ± 0.53 (7.08–8.36)	8.53 ± 0.59 (7.85–8.91)	7.92 ± 0.72 (7.08–8.91)	–2.44	0.06	0.76	0.60
L. caparensis	HH	6.16 ± 0.41 (5.65–6.7)	7.05 ± 0.56 (6.72–7.7)	6.5 ± 0.63 (5.65–7.7)	–2.63	***0.04***	0.53	0.30
L. caparensis	HW	8.8 ± 0.43 (8.4–9.33)	10.41 ± 0.91 (9.37–11.07)	9.41 ± 1.02 (8.4–11.07)	–3.49	***0.01***	0.19	0.39
L. caparensis	HL	10.95 ± 0.37 (10.4–11.4)	12.38 ± 0.91 (11.7–13.41)	11.49 ± 0.93 (10.43–13.41)	–3.21	***0.02***	0.13	0.80
L. caparensis	RND	1.83 ± 0.22 (1.58–2.15)	2.16 ± 0.13 (2.01–2.26)	1.95 ± 0.25 (1.58–2.26)	–2.4	0.05	0.60	0.79
L. caparensis	RH	0.97 ± 0.05 (0.9–1.01)	1 ± 0.1 (0.94–1.12)	0.98 ± 0.07 (0.9–1.12)	–0.74	0.49	0.17	0.36
L. caparensis	DRE	4.65 ± 0.25 (4.38–4.99)	5.23 ± 0.22 (5.09–5.49)	4.87 ± 0.38 (4.38–5.49)	–3.29	***0.02***	0.96	0.18
L. caparensis	AH	1.82 ± 0.18 (1.65–2.09)	2.13 ± 0.17 (1.94–2.24)	1.93 ± 0.23 (1.65–2.24)	–2.49	***0.05***	0.97	0.48
L. caparensis	TL	63 ± 2.94 (60–67)	74 ± 8.72 (68–84)	67.71 ± 8.01 (60–84)	4.5	***0.06***	0.11	0.57
Liolaemus magellanicus	SVL	54.75 ± 6.65 (48–63)	54 ± 3.69 (49–59)	54.3 ± 4.74 (48–63)	0.23	0.82	0.24	0.76
L. magellanicus	DFH	24.95 ± 6.01 (16.5–30.6)	23.88 ± 1.67 (22.1–26)	24.31 ± 3.73 (16.5–30.6)	1.14	0.35	Nonparametric	
L. magellanicus	FOL	13.19 ± 1.25 (11.4–14.2)	14 ± 0.98 (12.85–15.1)	13.64 ± 1.12 (11.4–15.1)	–1.09	0.31	0.64	0.32
L. magellanicus	TFL	8.29 ± 1.31 (6.44–9.51)	9.61 ± 0.69 (8.84–10.76)	9.08 ± 1.14 (6.44–10.76)	–2.11	0.07	0.20	0.76
L. magellanicus	RUL	5.55 ± 0.82 (4.47–6.28)	6.3 ± 0.48 (5.63–6.88)	6 ± 0.71 (4.47–6.88)	–1.83	0.10	0.28	0.43
L. magellanicus	HAL	7.85 ± 0.79 (6.93–8.83)	8.39 ± 0.73 (7.25–9.19)	8.17 ± 0.77 (6.93–9.19)	–1.1	0.30	0.81	0.65
L. magellanicus	HH	6.3 ± 1.02 (4.96–7.14)	7.25 ± 0.7 (6.27–7.89)	6.87 ± 0.93 (4.96–7.89)	–1.76	0.12	0.43	0.13
L. magellanicus	HW	8.78 ± 1.13 (7.28–9.7)	10 ± 0.74 (8.81–10.53)	9.51 ± 1.06 (7.28–10.53)	–2.1	0.07	0.38	0.12
L. magellanicus	HL	10.84 ± 1.37 (9.1–11.95)	11.89 ± 1.06 (10.5–13.37)	11.47 ± 1.24 (9.13–13.37)	–1.38	0.20	0.58	0.39
L. magellanicus	RND	1.86 ± 0.3 (1.47–2.15)	2.07 ± 0.19 (1.77–2.29)	1.98 ± 0.25 (1.47–2.29)	–1.36	0.21	0.34	0.44
L. magellanicus	RH	0.91 ± 0.12 (0.76–1.03)	0.89 ± 0.12 (0.74–1.08)	0.9 ± 0.12 (0.74–1.08)	0.31	0.76	0.94	0.51
L. magellanicus	DRE	4.49 ± 0.51 (3.82–4.92)	4.75 ± 0.42 (4.16–5.3)	4.65 ± 0.45 (3.82–5.3)	–0.88	0.41	0.65	0.28
L. magellanicus	AH	1.74 ± 0.32 (1.27–1.95)	1.99 ± 0.21 (1.69–2.3)	1.89 ± 0.27 (1.27–2.3)	–1.48	0.18	0.39	0.55
L. magellanicus	TL	55.25 ± 9.54 (44–65)	63.5 ± 6.45 (59–73)	59.38 ± 8.73 (44–73)	–1.43	0.20	0.54	0.31

APPENDIX 7

Statistical tests performed on the morphometric variables standardized by snout–vent length (SVL) for species with sexual dimorphism for SVL. Student's *t* test or Kruskal–Wallis (when assumptions were rejected; nonparametric) *P*-values and statistics are shown. Assumptions to perform a parametric test (Student's t) are normality (*p*-SW, Shapiro–Wilks test) and variance homogeneity (*p*-HomVar, Levene test); if those tests were rejected ($P > 0.05$) a nonparametric test was performed). Significant values are in italics and bold. DFH, distance between fore and hind limbs; FOL, foot length; TFL, tibia–fibula length; RUL, radius–ulna length; HAL, hand length; HH, head height; HW, head width; HL, head length; RND, rostral–nasal distance; RH, rostral height; DRE, distance from rostral to the eye; AH, auditory meatus height.

Species	Variable	Statistic	*p*-t-test/KW	*p*-HomVar	*p*-SW
Liolaemus chacabucoense	DFH/SVL	6.01	***<0.0001***	0.299	0.924
L. chacabucoense	FOL/SVL	5.01	***0.0256***	Nonparametric	
L. chacabucoense	TFL/SVL	–5.83	***0.0001***	0.0884	0.972
L. chacabucoense	RUL/SVL	–1.23	0.242	0.705	0.62
L. chacabucoense	HAL/SVL	–2	0.0668	0.8125	0.135
L. chacabucoense	HH/SVL	–5.27	***0.0002***	0.0788	0.555
L. chacabucoense	HW/SVL	–5.57	***0.0001***	0.7904	0.781
L. chacabucoense	HL/SVL	–2.53	***0.025***	0.642	0.038
L. chacabucoense	RND/SVL	–1.02	0.3271	0.4587	0.717
L. chacabucoense	RH/SVL	–1.87	0.0842	0.6989	0.489
L. chacabucoense	DRE/SVL	–0.15	0.881	0.0666	0.73
L. chacabucoense	AH/SVL	–2.68	***0.0189***	0.8233	0.437
L. chacabucoense	TL/SVL	0.06	0.84	Nonparametric	
Liolaemus kolengh	DFH/SVL	4.61	***0.0001***	0.3847	0.067
L. kolengh	FOL/SVL	–1.8	0.0848	0.1023	0.282
L. kolengh	TFL/SVL	8.57	***0.0034***	Nonparametric	
L. kolengh	RUL/SVL	–2.52	***0.0187***	0.6932	0.418
L. kolengh	HAL/SVL	–1.83	0.0799	0.0653	0.858
L. kolengh	HH/SVL	–2.98	***0.0063***	0.4002	0.829
L. kolengh	HW/SVL	–3.4	***0.0023***	0.5619	0.114
L. kolengh	HL/SVL	11.01	***0.0009***	Nonparametric	
L. kolengh	RND/SVL	–1.57	0.1288	0.3831	0.153
L. kolengh	RH/SVL	–0.15	0.8799	0.806	0.408
L. kolengh	DRE/SVL	–3.41	***0.0022***	0.6804	0.81
L. kolengh	AH/SVL	–2.03	0.0533	0.1288	0.465
L. kolengh	TL/SVL	0.04	0.85	Nonparametric	
Liolaemus tristis	DFH/SVL	14.14	***0.0002***	Nonparametric	
L. tristis	FOL/SVL	–2.16	***0.0445***	0.9674	0.851
L. tristis	TFL/SVL	14.14	***0.0002***	Nonparametric	
L. tristis	RUL/SVL	–3.08	***0.0065***	0.6677	0.465
L. tristis	HAL/SVL	–2.22	***0.0393***	0.5496	0.634
L. tristis	HH/SVL	–4.76	***0.0002***	0.4016	0.164
L. tristis	HW/SVL	–3.93	***0.001***	0.1731	0.069
L. tristis	HL/SVL	13.02	***0.0003***	Nonparametric	
L. tristis	RND/SVL	–2.13	***0.0473***	0.667	0.697
L. tristis	RH/SVL	–0.84	0.4111	0.1559	0.601
L. tristis	DRE/SVL	–1.92	0.0707	0.0874	0.06
L. tristis	AH/SVL	–0.97	0.3447	0.4722	0.327
L. tristis	TL/SVL	0.04	0.85	Nonparametric	

APPENDIX 8

Statistical tests for meristic values. A, females of the *Liolaemus kingii-archeforus* group; B, males of the *L. kingii-archeforus* group; C, *Liolaemus lineomaculatus* group; D, *Liolaemus magellanicus* group. Letters in columns correspond to groups found by Di Rienzo, Guzmán, and Casanoves comparisons (DGC). ANOVA or Kruskal–Wallis (KW), Shapiro–Wilks and Levene *P*-values are shown. To assume normality and variance homogeneity Shapiro–Wilks and Levene tests should not be rejected ($P > 0.05$). In cases (nonpar) in which either normality or variance homogeneity was rejected, Kruskal–Wallis tests (nonparametric ANOVA test) were performed and *P*-values are shown. Z indicates that there were no statistical differences in the comparisons. Significant values are shown in italics and bold. SCI, scales in contact with interparietal; LS, lorilabial scales; SS, supralabial scales; IS, infralabial scales; MS, midbody scales; DS, dorsal scales; VS, ventral scales; IL3, infradigital lamellae of the third finger; IL4, infradigital lamellae of the fourth toe.

A

Females	SCI	LS	SS	IS	MS	DS	VS	IL3	IL4
Liolaemus archeforus	–	–	A	Z	A-B	B	B	–	A
Liolaemus chacabucoense	–	–	A	Z	A-B	B	B	–	A
Liolaemus escarchadosi	–	–	B	Z	A	A	B	–	A
Liolaemus gallardoi	–	–	B	Z	A-B	B	B	–	A
Liolaemus sarmientoi	–	–	B	Z	A	A	A	–	A
Liolaemus scolaroi	–	–	A	Z	B	B	B	–	A
Liolaemus tari	–	–	B	Z	A	A	B	–	A
Liolaemus zullyae	–	–	B	Z	A-B	B	B	–	A
Liolaemus baguali	–	–	B	Z	B	B	B	–	A
Liolaemus kingii	–	–	B	Z	A-B	B	B	–	A
Liolaemus somuncurae	–	–	B	Z	B	B	B	–	B
Liolaemus tristis	–	–	B	Z	B	B	B	–	A
Liolaemus uptoni	–	–	B	Z	A-B	B	B	–	B
Statistic	16.08	13.49	3.48	20.13	57.37	10.35	3.44	17.63	2.23
p-ANOVA or KW	0.1	0.12	***0.0003***	***0.02***	***0.0001***	***0.0001***	***0.0003***	0.1	***0.0158***
p-Shapiro–Wilks	nonpar	nonpar	0.37	nonpar	nonpar	0.93	0.91	nonpar	0.61
p-Levene	–	–	0.09	–	–	0.16	0.18	–	0.24

B

Males	SCI	LS	SS	IS	MS	DS	VS	IL3	IL4
Liolaemus archeforus	–	A-B	A	B	C-D	B	A	B-C-D-E	A-B-C-D
Liolaemus chacabucoense	–	A-B-C	A	B	D	B	A	B-C-D-E	A-B-C-D
Liolaemus escarchadosi	–	A	A	B	A	A	A	A	A
Liolaemus gallardoi	–	A-B-C	B	B	D-E	B	A	B-C-D-E	B-C-D-E
Liolaemus sarmientoi	–	A	B	B	A-B	A	A	A-B-C-D	A-B
Liolaemus scolaroi	–	A-B-C	A	B	B-C-D	B	A	A-B-C	A-B-C
Liolaemus tari	–	B-C	A	B	A-B-C	A	A	A-B	A
Liolaemus zullyae	–	A-B-C	A	B	D-E	B	A	D-E-F	A-B-C-D
Liolaemus baguali	–	B-C	B	B	E-F	B	B	F	C-D-E
Liolaemus kingii	–	C	B	B	D-E	B	B	C-D-E	A-B-C-D
Liolaemus somuncurae	–	C	B	B	F	B	C	E-F	E
Liolaemus tristis	–	A-B-C	B	B	D-E	B	B	D-E-F	D-E
Liolaemus uptoni	–	A-B-C	A	A	B-C-D	B	B	D-E-F	D-E
Statistic	17.1	20.82	8.14	3.98	67.27	15.27	12.66	36.87	35.04
p-ANOVA or KW	0.07	***0.01***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0003***
p-Shapiro–Wilks	nonpar	nonpar	0.2	0.58	nonpar	0.99	0.79	nonpar	nonpar
p-Levene	–	–	0.72	0.2	–	0.08	0.23	–	–

APPENDIX 8 *Continued*

C

Males and females	SCI	LS	SS	IS	MS	DS	VS	IL3	IL4
Liolaemus morandae	A	–	B	B	C	B	C	A	B
Liolaemus avilae	B	–	A	A	B	B	C	B	B
Liolaemus lineomaculatus	A-B	–	B	A	C	C	D	B	B
Liolaemus hatcheri	A	–	B	B	A	A	A	A	A
Liolaemus kolengh	A	–	B	B	A	A	A	A	A
Liolaemus silvanae	A-B	–	B	A-B	C	C	B	B	B
Statistic	12.1	1.81	23.05	14.2	47.56	21.7	50.97	5.97	11.51
p-ANOVA or KW	***0.02***	0.8	***0.0008***	***0.002***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***
p-Shapiro–Wilks	nonpar	nonpar	nonpar	nonpar	0.6695	0.3285	0.709	0.3209	0.2463
p-Levene	–	–	–	–	0.8527	0.4944	0.0987	0.2703	0.809

D

Males and females	SCI	LS	SS	IS	MS	DS	VS	IL3	IL4
Liolaemus caparensis	–	A	A	A	–	B	B	B	B
Liolaemus magellanicus	–	A	A	A	–	A	A	A	A
Statistic	0.6	0.05	0.2	0.87	2.03	19.3	30.72	14.2	13.92
p-ANOVA or KW	0.45	0.52	0.99	0.82	0.17	***0.0005***	***0.0001***	***0.001***	***0.0022***
p-Shapiro–Wilks	0.27	nonpar	nonpar	nonpar	0.0536	0.23	0.5038	0.2754	0.5513
p-Levene	0.34	–	–	–	0.4175	0.41	0.4339	0.7425	0.088

APPENDIX 9

Statistical tests for morphometric values. A, females of the *Liolaemus kingii-archeforus* group; B, males of the *L. kingii-archeforus* group; C, females of the *L. kingii-archeforus* group standardized by snout–vent length (SVL); D, males of the *L. kingii-archeforus* group standardized by SVL; E, females of the *Liolaemus lineomaculatus* group; F, males of the *L. lineomaculatus* group; G, females of the *L. lineomaculatus* group standardized by SVL; H, males of the *L. lineomaculatus* group standardized by SVL; I, *Liolaemus magellanicus* group. Letters in columns correspond to groups found by the Di Rienzo, Guzmán, and Casanoves comparisons (DGC). ANOVA or Kruskal–Wallis (KW), Shapiro–Wilks and Levene *P*-values are shown. To assume normality and variance homogeneity Shapiro–Wilks and Levene test should not be rejected ($P > 0.05$). In several cases (nonpar) in which either normality or variance homogeneity was rejected, Kruskal–Wallis tests (nonparametric ANOVA test) were performed and *P*-values are shown. Significant values are in italics and bold. TL, tail length; DFH, distance between fore and hind limbs; FOL, foot length; TFL, tibia–fibula length; RUL, radius–ulna length; HAL, hand length; HH, head height; HW, head width; HL, head length; RND, rostral–nasal distance; RH, rostral height; DRE, distance from rostral to the eye; AH, auditory meatus height.

A

Females	SVL	TL	DFH	FOL	TFL	RUL	HAL	HH	HW	HL	RND	RH	DRE	AH
Liolaemus archeforus	A-B	A-B-C	–	A	A-B	A-B	A-B-C-D	A-B	A	A	A	A	A	A
Liolaemus chacabucoense	A	A-B	–	A	A	A	A-B	A	A	A	A	A	A-B	A
Liolaemus escarchadosi	A-B	B-C	–	A	B-C-D	B-C	C-D	B-C	A	B	B	A-B	B-C	A-B
Liolaemus gallardoi	B	B-C	–	B	A-B-C	B	A-B-C	B-C	A	A-B	A	A-B	A-B-C	A-B
Liolaemus sarmientoi	B	A-B	–	A	A-B-C-D	B	A-B-C-D	B-C	A	A-B	B	A-B	A-B	B
Liolaemus scolaroi	A	A	–	A	A	A-B	A	A-B	A	A	A	A	A-B	A-B
Liolaemus tari	B	C	–	B	D	C	C-D	C	B	B	C	B	C	B
Liolaemus zullyae	A-B	B-C	–	A	A-B	A-B	A-B	A-B-C	A	A-B	B	A-B	A-B-C	A-B
Liolaemus baguali	B	B-C	–	B	C-D	B-C	D	B-C	B	B	B	A-B	B-C	B
Liolaemus kingii	A-B	A-B	–	A	A-B	B	A-B	B-C	A	A-B	A	A	A-B	B
Liolaemus somuncurae	B	A-B	–	A	B-C-D	B-C	B-C-D	C	B	B	C	A-B	C	B
Liolaemus tristis	A-B	A-B	–	A	A-B	A-B	A-B	A-B	A	A	A	A-B	A-B	A-B
Liolaemus uptoni	A-B	A-B-C	–	A	A-B	B-C	A-B-C	A-B	A	A-B	C	A-B	B-C	A-B
Statistic	36.68	28.9	18.45	7.81	53.77	43.85	44.62	41.35	7.67	49.73	12.85	28.21	53.88	37.31
p-ANOVA or KW	***0.0002***	***0.004***	**0.1026**	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0051***	***0.0001***	***0.0002***
p-Shapiro–Wilks	nonpar	nonpar	nonpar	0.47	nonpar	nonpar	nonpar	nonpar	0.96	nonpar	0.89	nonpar	nonpar	nonpar
p-Levene	–	–	–	0.3	–	–	–	–	0.12	–	0.34	–	–	–

APPENDIX 9 *Continued*

B

Males	SVL	TL	DFH	FOL	TFL	RUL	HAL	HH	HW	HL	RND	RH	DRE	AH
Liolaemus archeforus	A-B	B	A-B	B	B-C	A	A-B	A-B	A-B	A-B-C	A-B	A	A-B	A
Liolaemus chacabucoense	A	B	A-B-C	B	A-B	A	A-B	A-B	A-B	A-B	A	A	A-B	A-B
Liolaemus escarchadosi	A-B-C	B	B-C-D	B	C-D-E	C	A-B	B-C-D	B-C-D-E	D-E-F	B-C-D-E-F	A	C-D	C-D-E-F
Liolaemus gallardoi	A-B	B	B-C	B	C-D	C	B	B-C	B-C-D	A-B-C	A-B-C	B	B	A-B-C
Liolaemus sarmientoi	B-C	B	B-C-D	B	C-D	C	B-C	B-C-D	B-C-D-E	C-D-E	A-B-C-D-E	A	A-B	F
Liolaemus scolaroi	A	A	A	A	A	A	A	A	A	A	A-B-C-D-E	A	A	A
Liolaemus tari	C	C	D	C	E	D	C	D	E	F	E-F	B	D	F
Liolaemus zullyae	A	B	A	B	A-B-C	B	A-B	B-C	A-B	A-B-C-D	D-E-F	A	B-C	A-B-C-D
Liolaemus baguali	C	B	B-C-D	C	D-E	C	C	B-C-D	D-E	E-F	D-E-F	A	C-D	E-F
Liolaemus kingii	A-B	B	B-C-D	B	B-C	C	A	B-C-D	B	C-D-E	A-B-C-D	A	A-B	F
Liolaemus somuncurae	C	B	C-D	B	D-E	C	C	C-D	C-D-E	E-F	F	B	D	B-C-D-E-F
Liolaemus tristis	A-B	B	B-C	B	B-C	C	A-B	B-C	B-C	B-C-D	A-B	A	A-B	A-B-C-D-E
Liolaemus uptoni	A-B-C	B	B-C-D	B	B-C-D	C	A-B	B-C-D	B-C-D	D-E-F	C-D-E-F	A	D	D-E-F
Statistic	37.23	4.45	34.43	9.24	46.07	11.22	49.24	25.56	37.09	58.93	39.55	3.32	75.32	50.62
p-ANOVA or KW	***0.0002***	***0.0001***	***0.0006***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0124***	***0.0002***	***0.0001***	***0.0001***	***0.0005***	***0.0001***	***0.0001***
p-Shapiro–Wilks	nonpar	0.21	nonpar	0.83	nonpar	0.87	nonpar	nonpar	nonpar	nonpar	nonpar	0.59	nonpar	nonpar
p-Levene	–	0.08	–	0.23	–	0.16	–	–	–	–	–	0.78	–	–

APPENDIX 9 *Continued*

C

Females	TL/ SVL	DFH/ SVL	FOL/ SVL	TFL/ SVL	RUL/ SVL	HAL/ SVL	HH/ SVL	HW/ SVL	HL/ SVL	RND/ SVL	RH/ SVL	DRE/ SVL	AH/ SVL
Liolaemus archeforus	–	A	–	A	A	B	–	A	A	A	–	A	A-B
Liolaemus chacabucoense	–	B	–	A	A	A	–	A	A	A	–	A	A-B
Liolaemus escarchadosi	–	A	–	B	B	B	–	B	B	B	–	B	A-B-C
Liolaemus gallardoi	–	A	–	A	B	A	–	A	A	A	–	A	A
Liolaemus sarmientoi	–	A	–	A	B	A	–	A	A	A	–	A	B-C
Liolaemus scolaroi	–	A	–	A	B	A	–	A	A-B	A	–	A-B	A-B-C
Liolaemus tari	–	A	–	A	B	A	–	A	B	B	–	B	A-B
Liolaemus zullyae	–	B	–	A	B	A	–	A	A-B	B	–	A-B	A-B-C
Liolaemus baguali	–	A	–	B	B	B	–	B	A-B	A	–	A-B	A-B-C
Liolaemus kingii	–	B	–	A	B	A	–	A	A-B	A	–	A	C
Liolaemus somuncurae	–	A	–	A	B	A	–	A	B	B	–	B	A-B
Liolaemus tristis	–	B	–	A	B	A	–	A	A	A	–	A	A-B-C
Liolaemus uptoni	–	A	–	B	C	B	–	B	B	B	–	B	B-C
Statistic	9.98	5.03	1.63	2.15	5.37	3.19	20.89	2.61	45.36	5.92	14.53	51.12	29.97
p-ANOVA or KW	0.62	***0.0001***	0.11	***0.03***	***0.0001***	***0.0014***	0.052	***0.007***	***0.0001***	***0.0001***	0.27	***0.0001***	***0.003***
p-Shapiro-Wilks	nonpar	0.37	0.88	0.36	0.46	0.21	nonpar	0.99	nonpar	0.48	nonpar	nonpar	nonpar
p-Levene	–	0.11	0.22	0.14	0.11	0.84	–	0.11		0.13	–	–	–

APPENDIX 9 *Continued*

D

Males	TL/ SVL	DFH/ SVL	FOL/ SVL	TFL/ SVL	RUL/ SVL	HAL/ SVL	HH/ SVL	HW/ SVL	HL/ SVL	RND/ SVL	RH/ SVL	DRE/ SVL	AH/ SVL
Liolaemus archeforus	A-B-C-D	A-B	C-D	–	A-B	–	B	A-B-C	A	A-B	A	A-B-C-D	A
Liolaemus chacabucoense	A-B-C-D	B-C	A-B-C	–	A	–	B	A-B	A	A-B	A	A-B-C	A-B-C
Liolaemus escarchadosi	A-B-C-D	A-B-C	A-B-C-D	–	D	–	B	B-C-D	C-D	A-B-C	A	E-F	C-D-E
Liolaemus gallardoi	D	A-B-C	D	–	B-C-D	–	B	A-B-C	A	A-B	B	B-C-D	A-B
Liolaemus sarmientoi	A-B	A-B-C	A-B	–	A-B	–	B	A-B-C	A	A	A	A	D-E
Liolaemus scolaroi	A-B-C	A-B-C	A-B-C-D	–	A-B	–	A	A	A-B-C	B-C-D	A	B-C-D-E	A-B-C-D-E
Liolaemus tari	B-C-D	A-B-C	A-B-C	–	B-C-D	–	B	D	D	B-C-D	A	E-F	A-B-C-D
Liolaemus zullyae	C-D	A	B-C-D	–	B-C	–	B	C-D	B-C-D	D	A	D-E-F	A-B-C-D
Liolaemus baguali	A-B-C-D	A-B	A-B-C-D	–	A-B-C	–	A	A-B-C	B-C-D	A-B-C	A	C-D-E-F	B-C-D-E
Liolaemus kingii	A-B-C	C	A-B	–	B-C	–	B	A-B	B-C	A-B	A	A-B	E
Liolaemus somuncurae	A	A	A	–	B-C	–	B	A-B-C	C-D	B-C-D	A	E-F	A-B-C
Liolaemus tristis	A-B-C	A-B-C	A-B-C-D	–	B-C-D	–	B	A-B-C	A-B	A	A	A-B-C	A-B-C-D
Liolaemus uptoni	A-B-C-D	B-C	A	–	C-D	–	C	A-B-C-D	D	C-D	A	F	D-E
Statistic	24.36	24.52	39.31	20.17	33.43	1.13	3.25	27.03	65.67	38.54	2.42	73.36	38.76
p-ANOVA or KW	***0.02***	***0.02***	***0.0001***	0.06	***0.0008***	0.34	***0.0006***	***0.007***	***0.0001***	***0.0001***	***0.008***	***0.0001***	***0.0001***
p-Shapiro–Wilks	nonpar	nonpar	nonpar	nonpar	nonpar	0.76	0.71	nonpar	nonpar	nonpar	0.92	nonpar	nonpar
p-Levene	–	–	–	–	–	0.46	0.09	–	–	–	0.3	–	–

APPENDIX 9 *Continued*

E

Females	SVL	TL	DFH	FOL	TFL	RUL	HAL	HH	HW	HL	RND	RH	DRE	AH
Liolaemus avilae	A	B	A	A	A	A	A	A	A	A	A	A	A	A
Liolaemus hatcheri	B	A	B	A	A	A	B	A	A	B	B	B	B	A
Liolaemus kolengh	A	A	A	A	A	A	B	A	A	A	A	B	A	A
Liolaemus lineomaculatus	A	C	A	A	A	A	A	A	A	B	A	B	A	A
Liolaemus morandae	A	B	A	A	A	A	A	A	A-B	B	B	B	A	A
Liolaemus silvanae	C	C	B	B	B	B	C	B	B	C	B	C	C	B
Statistic	21.28	18.19	9.52	32.23	22.5	19.45	58.23	8.73	24.17	17.49	3.26	7.57	14.48	6.99
p-ANOVA or KW	***0.001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0002***	***0.0001***	***0.0149***	***0.0001***	***0.0001***	***0.0002***
p-Shapiro–Wilks	0.32	0.42	0.6	0.35	0.28	0.9	0.49	0.85	nonpar	0.85	0.06	0.92	0.44	0.87
p-Levene	0.43	0.15	0.12	0.4	0.64	0.1	0.35	0.42	–	0.19	0.42	0.3	0.77	0.48

F

Males	SVL	TL	DFH	FOL	TFL	RUL	HAL	HH	HW	HL	RND	RH	DRE	AH
Liolaemus avilae	A	A	A	A	A-B	A	A	A-B	A	A	A	A	A	A
Liolaemus hatcheri	A	A	B	A	A	B	B	B	B	B	B	A-B	B-C	B
Liolaemus kolengh	A	A	A	A	A-B	B	B	A	B	A-B	B	B-C	B	B
Liolaemus lineomaculatus	A	B	A	A	B-C	B	A-B	A-B	A	A	B	A-B	A	A
Liolaemus morandae	A	B	A	A	A-B-C	A	A-B	A-B	A	A-B	B	A-B-C	A-B	B
Liolaemus silvanae	B	B	C	B	C	C	C	C	C	C	C	C	C	C
Statistic	32.01	6.5	10.81	39.29	32.47	22.13	39.23	26.82	38.9	29.19	10.2	18.73	26.24	9.48
p-ANOVA or KW	***0.0001***	***0.0005***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0021***	***0.0001***	***0.0001***
p-Shapiro–Wilks	nonpar	0.63	0.37	0.29	nonpar	0.62	nonpar	nonpar	0.83	nonpar	0.1	nonpar	nonpar	0.94
p-Levene	–	0.45	0.38	0.35	–	0.06	–	–	0.06	–	0.15	–	–	0.87

APPENDIX 9 *Continued*

G

Females	TL/ SVL	DFH/ SVL	FOL/ SVL	TFL/ SVL	RUL/ SVL	HAL/ SVL	HH/ SVL	HW/ SVL	HL/ SVL	RND/ SVL	RH/ SVL	DRE/ SVL	AH/ SVL
Liolaemus avilae	C	–	B	B	–	A	B	A	A-B	B	A	A	A
Liolaemus hatcheri	A	–	A	A	–	A	A	A	A	B	A	A	A
Liolaemus kolengh	B	–	B	B	–	B	B	B	B	B	B	B	B
Liolaemus lineomaculatus	C	–	B	B	–	A	C	A	B	B	A	A	A
Liolaemus morandae	C	–	B	A	–	A	C	A	B	B	B	A	A
Liolaemus silvanae	B	–	B	B	–	B	A	A	A	A	A	A	A
Statistic	17.3	1.88	3.82	5.79	2.11	16.99	7.74	4.4	18.44	6.27	4.44	9.06	3.44
p-ANOVA or KW	***0.0001***	0.13	***0.0081***	***0.0006***	0.09	***0.0001***	***0.0001***	***0.0036***	***0.002***	***0.0004***	***0.0035***	***0.0001***	***0.01***
p-Shapiro–Wilks	0.79	nonpar	0.94	0.2	0.92	0.98	0.56	0.61	nonpar	0.55	0.9	0.5	0.82
p-Levene	0.46	–	0.54	0.63	0.59	0.21	0.26	0.06	–	0.58	0.56	0.69	0.6

H

Males	TL/ SVL	DFH/ SVL	FOL/ SVL	TFL/ SVL	RUL/ SVL	HAL/ SVL	HH/ SVL	HW/ SVL	HL/ SVL	RND/ SVL	RH/ SVL	DRE/ SVL	AH/ SVL
Liolaemus avilae	B	–	B-C	B	–	A	C	A-B	C	A-B	A-B	B-C	A-B
Liolaemus hatcheri	A	–	A	A	–	A	B	A-B-C	B	B	A	B-C	A
Liolaemus kolengh	A	–	A-B	B	–	B	B	C	B	B	B	B-C	B-C
Liolaemus lineomaculatus	B	–	A	B	–	A	C	A	B	B	A-B	A-B	A
Liolaemus morandae	B	–	C	B	–	A	D	A-B-C	D	B	B	C	C
Liolaemus silvanae	A	–	A	B	–	B	A	B-C	A	A	A	A	A-B
Statistic	16.16	10.06	17.47	37.39	5.61	9.34	17.53	15.43	13.54	17.56	14.05	20.81	16.32
p-ANOVA or KW	***0.0001***	0.07	***0.0037***	***0.0001***	0.35	***0.0001***	***0.0001***	***0.0087***	***0.0001***	***0.0035***	***0.015***	***0.0009***	***0.006***
p-Shapiro-Wilks	0.71	nonpar	nonpar	nonpar	nonpar	0.63	0.46	nonpar	0.7	nonpar	nonpar	nonpar	nonpar
p-Levene	0.38	–	–	–	–	0.35	0.23	–	0.76	–	–	–	–

I

Males and females	SVL	TL	DFH	FOL	TFL	RUL	HAL	HH	HW	HL	RND	RH	DRE	AH
Liolaemus caparensis	–	–	–	–	A	A	–	–	–	–	–	–	–	–
Liolaemus magellanicus	–	–	–	–	B	B	–	–	–	–	–	–	–	–
Statistic	1.49	13.29	0.00	0.45	15.22	7.13	0.53	0.95	0.05	0.00	0.07	3.28	1.24	0.14
p-ANOVA or KW	0.24	0.08	0.95	0.51	***0.00***	***0.02***	0.47	0.34	0.83	0.97	0.80	0.09	0.28	13.28
p-Shapiro-Wilks	0.46	0.79	0.66	0.71	0.77	0.58	0.18	0.71	0.69	0.90	0.27	0.53	0.26	0.87
p-Levene	0.42	0.83	0.08	0.61	0.54	0.34	0.80	0.22	0.87	0.33	0.77	0.06	0.44	0.92