A new, but probably extinct, species of *Cnemidophorus* (Squamata, Teiidae) from Uruguay

Mario R. Cabrera[1] & Santiago Carreira[2,3]

[1]*Departamento de Diversidad Biológica y Ecología, Universidad Nacional de Córdoba, Argentina*
[2]*Sección Zoología Vertebrados, Facultad de Ciencias, Montevideo, Uruguay*
[3]*Museo Nacional de Historia Natural y Antropología, Montevideo, Uruguay*

A new species of *Cnemidophorus* related to the *lacertoides* group is described. The new taxon is distinguished from all other species of the genus by the following combination of character states: 81–98 granular dorsal scales across midbody; 201–206 dorsal scales along midline from nape to rump in males, 208–229 in females; 10 longitudinal rows of ventral scales in both sexes; 19–22 femoral pores in total; 13–15 subdigital lamellae under fourth finger, 20–25 lamellae under fourth toe; 3–4 supraoculars on each side; reduced expression of the "*lacertoides* pattern", which may be absent and replaced by a broad greenish mid-dorsal stripe on a brownish-grey background; ventral surfaces of head, body, limbs and tail pearly white, with the most lateral ventral scales of the body completely dark along the belly. The new species also exhibits some anatomical differences from its most closest related species, *C. lacertoides*. The hyobranchial apparatus of *Cnemidophorus* new sp. has a pair of short cartilaginous second ceratobranchials, articulated behind the basihyal–first ceratobranchial joint. This structure is absent in the hyobranchial apparatus of *C. lacertoides sensu stricto* which, moreover, has hypohyals that are relatively longer than in the new species. The new taxon is known only from the type locality, Cabo Polonio, Rocha Department, on the Atlantic coast of Uruguay, in a habitat of rocky grassland. Records of individuals are lacking from three decades to date and detailed field surveys in recent years in search of the lizard were unfruitful. We assume that this taxon is probably extinct. The pressure of increased human presence on the limited suitable habitat in the Cabo Polonio region could have caused its extinction.

Key words: Cnemidophorus lacertoides, extinction, new species, taxonomy

INTRODUCTION

The genus *Cnemidophorus* Wagler 1830 is in an active state of taxonomic updating, as evidenced by the descriptions of several new taxa within the last decade as well as the segregation of *Aspidoscelis* Fitzinger 1843, a name resurrected to accommodate the North American taxa formerly included in *Cnemidophorus* (Rocha et al., 1997, 2000; Feltrim & Lema, 2000; Dias et al., 2002; Reeder et al., 2002; Colli et al., 2003; Cabrera, 2004).

Wright (1993) considered all the South American species to be included in a large *C. lemniscatus* species group, based on external morphology and karyology. Cei (1993) included the Argentine *Cnemidophorus* in one of three species groups on the basis of pholidosis and anatomical characters: the *lacertoides* group, the *lemniscatus* group and the "*longicaudus*" group. Later, Cabrera (2004) proposed splitting the large *lemniscatus* group in two – the *lemniscatus* group (to include all species whose males bear preanal spurs) and the *ocellifer* group (for all species allied to *Cnemidophorus ocellifer*) – to improve the internal cohesiveness of the South American species groups. The *longicauda* group, formerly monotypic, was expanded by inclusion of *C. tergolaevigatus*.

As presently understood, the *lacertoides* species group remains composed by *Cnemidophorus lacertoides*, *C. leachei*, *C. serranus* and *C. vacariensis*. In this paper we describe a new species of *Cnemidophorus* related to the *lacertoides* group.

MATERIALS AND METHODS

The new taxon was compared to museum specimens of the species *Cnemidophorus lacertoides*, *C. leachei*, *C. longicauda*, *C. ocellifer sensu lato*, *C. serranus* and *C. tergolaevigatus*. Comparisons with *Cnemidophorus vacariensis* were made through photographs and descriptions from the literature. For the purpose of this paper, we considered specimens from its terra typica, Montevideo, as well as nearby populations from Uruguayan departments south to the Negro river, as *Cnemidophorus lacertoides sensu stricto*. *Cnemidophorus lacertoides sensu lato* included specimens from Argentina and northern Uruguay, because ongoing research by the first author suggests that current taxonomy could be masking species complexes. The specimens examined are listed in the Appendix.

Measurements were taken to the nearest 0.1 mm with digital calipers under a dissecting stereomicroscope. Specimens under 45 mm snout–vent length were not included, to prevent ontogenetic allometric bias. Sex was determined by gonad inspection through a small incision on the left side of the venter when the specimens were intact or without everted hemipenes. Anatomical comparisons were made between the new species and

Correspondence: Mario R. Cabrera, Departamento de Diversidad Biológica y Ecología, Universidad Nacional de Córdoba, Vélez Sarsfield 299, (5000) Córdoba, Argentina. *E-mail:* mcabrera@efn.uncor.edu

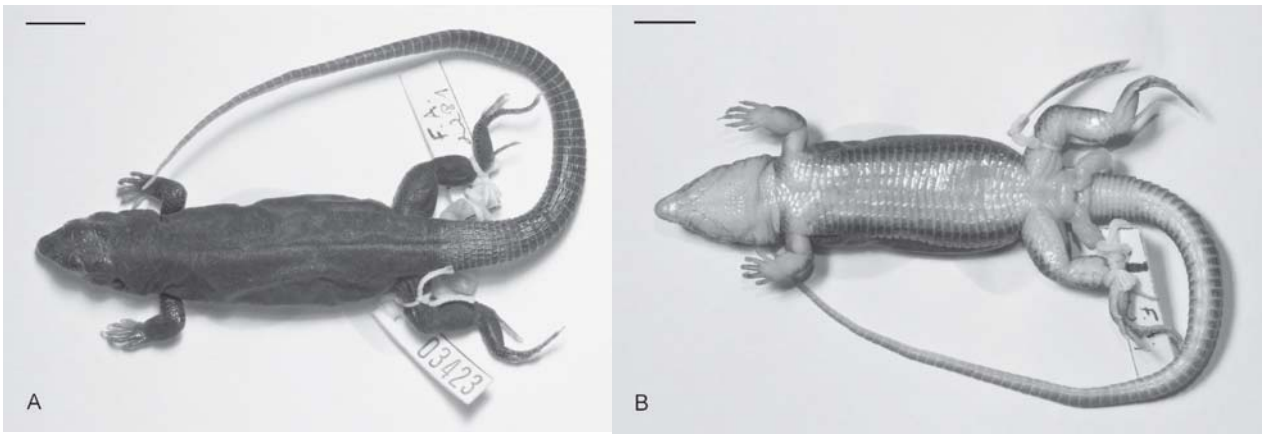

Fig. 1. *Cnemidophorus charrua* new sp. The holotype (MNHN 03423) in dorsal (A) and ventral (B) views. Scale bar = 1 cm.

Cnemidophorus lacertoides sensu stricto by dry skeletonizing of skull and mandible and clearing-and-staining preparation of the hyoid apparatus following Wassersug (1976). Due to the limited availability of specimens of the new taxon, we refrained from disassembling more than one individual. A male adult of the new species (ZVC-R 1856) was chosen for osteological comparison with a male *C. lacertoides sensu stricto* of equivalent snout–vent length (ZVC-R 1266) from the type locality of *C. lacertoides*. Statistical analyses were performed using InfoStat software (InfoStat, 2008) at a significance level of $P \leq 0.05$.

Variables previously known to be of predictive value for lizard taxonomy were examined mostly following Peters (1964), Wright & Lowe (1967), Markezich et al. (1997) and Colli et al. (2003), plus others defined here for their suitability for this set of species. Tail length was not recorded because of uncertainty about completeness, regeneration, or partial loss of the original tail. Multivariate analysis, although a useful tool in researching relationships in this difficult genus (e.g. Markezich et al., 1997), was impracticable in the new taxon due to the small sample size. The definitions of the recorded variables, and their codes in brackets, are as follows:

1) Snout–vent length (SVL): measured along the midventral line from tip of snout to posterior edge of the preanal flap.

2) Head length (HL): from tip of snout to posterior margin of the ear, along a line parallel to medial axis of the head.

3) Snout length (SL): from tip of snout to anterior tip of frontal scale.

4) Head depth (HD): measured vertically at the junction between the frontal and frontoparietal scales.

5) Axilla–groin distance (AG): measured in a straight line from the posterior margin of the forelimb insertion to the anterior margin of the hindlimb insertion. Only left side measured.

6) Dorsal scales at midbody (DS): number of dorsal scales across the body, counted from side to side at the half-way point of the axilla–groin distance.

7) Scales between the medialmost light stripes (SPV): the number of scales included between the closest paravertebral (or dorsolateral, if paravertebral stripes are absent) light stripes at midbody. This character reflects the variation in the amount of mid-dorsal separation between the nearest light stripes.

8) Scales between nape and rump (NRS): counted from the first granular scale posterior to the enlarged postparietal scales of the occiput, along the vertebral midline to the last granular scale before the scale enlargement and keeling on the rump.

9) Transverse rows of ventral scales (TVS): counted along the midventral line, inmediately behind the granular scales posterior to the gular fold to anterior margin of hindlimbs.

10) Longitudinal rows of ventral scales (LVS): counted at midbody (half axilla–groin distance).

11) Supralabial scales (SLB): expressed left/right when counts on each side are discordant.

12) Infralabial scales (ILB): expressed left/right when counts on each side are discordant.

13) Supraocular scales (SOC): expressed left/right when counts on each side are discordant.

14) Number of parietal plates (PAP): the sum of large scales on the parietal area, i.e. interparietal + frontoparietals + parietals. Postparietals (= occipitals) not included.

15) Femoral pores (FP): the total sum of both thighs.

16) Lamellar scales under fourth finger (FFS): counted on the left hand of each specimen, including the scale below claw.

17) Lamellar scales under fourth toe (FTS): counted on the left foot of each specimen, including the scale below claw.

18) Scales around the tail (SAT): number of scales around the tail on its fifth complete postcloacal ring.

Ratios:

19) Head length/snout–vent length (HL/SVL).

20) Snout length/head length (SL/HL).

21) Axilla–groin distance/snout–vent length (AG/SVL).

22) Suture length between anterior nasals/suture length between prefrontal scales (SN/SPR).

23) Postnasal scale length/loreal scale length (PN/LO): Measured on a straight line from the middle level of the nostril, backwards. Only left side was measured.

24) Percentage of scales between the dorsalmost light stripes involved in the scales at midbody (SPV/DS).

RESULTS

Cnemidophorus charrua new species

Holotype. MNHN 03423. Adult male (Fig. 1). Uruguay: Departamento Rocha: Cabo Polonio (34º 24' 21" S; 53º 46' 57" W). February 3, 1977; F. Achaval, col.

Paratypes. MNHN 03422 and 03424, two adult females; ZVC-R 1856 and 1865, adult male and female, respectively; all from the same locality as the holotype. February 16, 1972; F. Achaval, col.

The paratype ZVC-R 1856 currently with skull and mandible apart in dry preparation, tongue in 70% ethanol and stained and cleared hyoid apparatus in glycerol.

Other reference material. ZVC-R 2505/06, 2519/20; CM 65052.

Diagnosis

A small-to-medium sized, robust, teiid lizard (75.2 mm maximum SVL), recognizable by a reduced expression of the "*lacertoides* pattern", which may be absent and replaced by a broad greenish mid-dorsal stripe on a brownish-grey background (Fig. 2); granular dorsal scales across midbody 81–98; dorsal scales along midline from nape to rump 201–206 in males, 208–229 in females; 10 longitudinal rows of quadrangular ventral scales in both sexes; 19–22 femoral pores in total; 13–15 subdigital lamellae under fourth finger, 20–25 lamellae under fourth toe; postnasal scale shorter than loreal scale and 3–4 supraoculars on each side.

Cnemidophorus charrua differs from taxa of the *lemniscatus* group – *C. l. lemniscatus* (Linnaeus, 1758); *C. l. splendidus* Markezich, Cole & Dessauer, 1997; *C. gramivagus* McCrystal & Dixon, 1987; *C. cryptus* Cole & Dessauer, 1993; *C. pseudolemniscatus* Cole & Dessauer, 1993; *C. arenivagus* Markezich, Cole & Dessauer, 1997 – in the lack of preanal spurs in males (present in all members of this species group) and fewer total femoral pores (19–22; usually more than 40 in the *lemniscatus* group). It is differentiated from members of the *ocellifer* species group – *Cnemidophorus ocellifer sensu stricto* (Spix, 1825); *C. ocellifer sensu lato*; *C. littoralis* Rocha, Araújo, Vrcibradic & Costa, 2000; *C. abaetensis* Dias, Rocha & Vrcibradic, 2002; *C. nativo* Rocha, Bergallo & Peccinini-Seale, 1997 – by a higher number of longitudinal rows of ventral scales (10 versus 8, except for *C. littoralis*, which has 9–11 rows; Dias et al., 2002), by the lack of supraorbital granular semicircles and a distinct colour pattern; moreover, *C. nativo* is unisexual (Rocha et al., 1997). It differs from *Cnemidophorus parecis* Colli, Costa, Garda, Kopp, Mesquita, Péres, Valdujo, Vieira & Wiederhecker, 2003 by having fewer scales around the midbody (81–98 vs 96–127), fewer femoral pores (19–22 in total vs 25–33) and a different dorsal pattern (Colli et al., 2003). It differs from the two taxa in the *longicauda* species group (*Cnemidophorus longicauda* (Bell, 1843) and *C. tergolaevigatus* Cabrera 2004) because these bear an operculum-like projection of skin from the anterodorsal margin of each ear opening, small scales separating the second supraocular from the frontal scale and a different colour pattern.

The new species belongs to the *lacertoides* species group (*Cnemidophorus lacertoides* Duméril & Bibron, 1839; *C. leachei* Peracca, 1897; *C. serranus* Cei & Martori, 1991 and *C. vacariensis* Feltrim & Lema, 2000). *Cnemidophorus charrua* may be distinguished from *C. leachei* by shorter feet, with fewer lamellar scales under the fourth toe (20–25 vs 27–30 in *C. leachei*) and more dorsal scales across the midbody (81–98, with means around 90 vs 82–88). It is distinguishable from *Cnemidophorus serranus* by having more dorsal scales across midbody (81–98 vs 63–76), 10 longitudinal rows of ventral scales versus generally eight in *C. serranus* and different coloration. *Cnemidophorus charrua* has 10 longitudinal rows of ventral scales and *C. vacariensis* generally has eight and the stripe pattern of white lines, present in some specimens of *C. charrua*, never shows as interrupted lines forming dashes or spots as seen in *C. vacariensis* and some populations of *Cnemidophorus* aff. *lacertoides*.

Cnemidophorus charrua most closely resembles *C. lacertoides sensu stricto*, from which it is distinguished by a different colour pattern (Fig. 3). The colour pattern in *C. charrua* shows individual variation from nearly patternless to striped, but, in the latter case, shows only faint black flecks between the dorsolateral and lateral white stripes. In contrast, both male and female Uruguayan *C. lacertoides* show typical bold black bars on the body flanks. *Cnemidophorus charrua* lacks marked dark spots on the scales of the underside of the head, present in *C. lacertoides*. The new species exhibits remarkable differences from *Cnemidophorus lacertoides sensu stricto* in its hyobranchial apparatus. In *C. charrua* there is a pair of short second ceratobranchials, evidenced as

Fig. 2. The paratype ZVC-R 1856 in life. Photograph courtesy of F. Achaval.

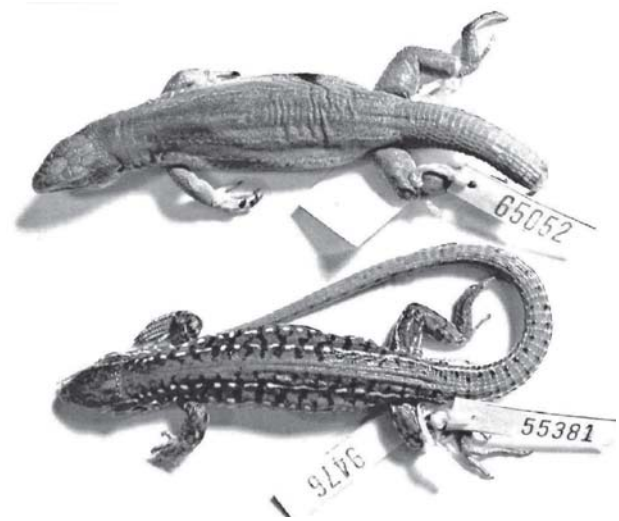

Fig. 3. The CM 65052 specimen of *Cnemidophorus charrua* in dorsal view (above), compared to an individual of *C. lacertoides* (CM 55381). Photo by S. Rogers and T. Beauvais.

cartilaginous projections articulated behind the basihyal–first ceratobranchial joint (Fig. 4). This structure is lacking in the hyobranchial apparatus of *C. lacertoides sensu stricto*, which, moreover, presents longer hypohyals than *C. charrua*.

Description of holotype

MNHN 03423, adult male, with everted hemipenes; snout–vent length 66.56 mm; head length 16.57 mm; tail complete, length 122 mm. Head triangular in dorsal aspect, with sides slightly concave. Canthus rostralis blunt, snout 1.5 times longer than eye length. Supraoculars distinctly convex, other dorsal plates flat and rugose. Rostral visible from above and below, partially incised on both sides by anterior nasal scales. Nasals large, paired, with the nostril situated between the anterior and posterior nasal scales; small mid-dorsal contact between anterior nasals, which also contact rostral, frontonasal, posterior nasals and supralabial 1. Two posterior nasals on each side, subquadrangular; the uppermost contacting the anterior nasal, frontonasal, prefrontal, loreal and lower postnasal, the lowermost contacting anterior nasal, upper postnasal, loreal and supralabials 1–2. Loreal large, single, in broad contact with supralabial 3 on both sides of the head. Frontonasal rhomboidal, wider than long. Two prefrontals, irregularly rhomboidal, in slight contact with one another in the midline, each one also contacting the frontonasal, upper postnasal, loreal, frontal, first supraocular and first superciliary. Frontal single, flat and rugose, large, subheptagonal with rounded anterior corners, narrow behind; its three anteriormost sides contacting prefrontals, its lateral corners contacting the prefrontal–first supraocular seam, lateral borders in contact with supraoculars 1 and 2 and posterior sides contacting the anterior side of each frontoparietal. Two pentagonal frontoparietal plates, in broad contact with one another along midline; separated from supraoculars 2 and 3 (right side) and supraocular 3 (left) by an incomplete row of supraorbital granules, continued posteriorly as a field of granules separating the parietal plates of the third supraocular. Two large parietals, as long as wide, subpentagonal with concave posterior sides. Between them, a single interparietal on the midline, subhexagonal, longer than wide, with lateral sides long and almost parallel; its anterior and posterior sides straight and short. Postparietals consisting of polygonal and convex oval large scales, wider than long, behind the parietal and interparietal plates, followed posteriorly by granular scales. Supraoculars 3/3, convex, the first contacting the prefrontal, frontal, supraocular 2 and first superciliary. Superciliaries 5/5 in row, the first two longest; the first one contacting only one supraocular and touching also the loreal. Eyelids finely granular, lower eyelid with a group of five quadrangular scales in its centre, fairly translucent, surrounded by granular scales. Suboculars 5/4, all contacting supralabials; the first higher than long, in broad contact with the loreal and separated from the first superciliary by a granule. All suboculars markedly keeled near their upper borders. Supralabials 6/7, the three anteriormost with rounded free border and notched at the margin where each scale contacts its neighbours. Temple and cheek with swollen granular scales encircling a field of smaller granules. Ear opening oval, higher than wide, surrounded by tiny granular scales.

Mental subtriangular with straight base, followed in the midline by one subpentagonal postmental. Infralabials 5/5, the last four longer than high; the first infralabial contacting mental and postmental, the second contacting postmental and first chin shield, the third partially contacting first and second chin shields. The other infralabials excluded from contact with chin shields by a row of small sublabials in a single or, in parts, double row below infralabials. Five pairs of chin shields, the first pair

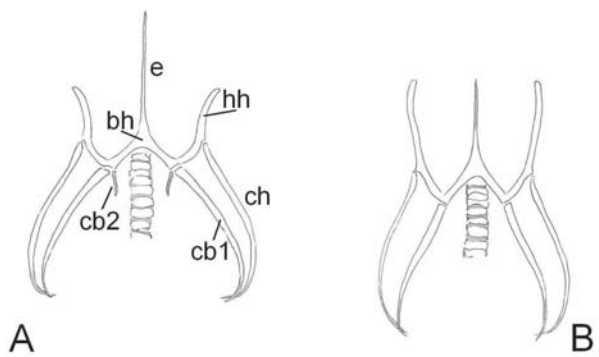

Fig. 4. Schematic representation of the hyobranchial apparatus of *Cnemidophorus charrua* (ZVC-R 1856) (A), compared to the hyobranchial apparatus of *Cnemidophorus lacertoides* sensu stricto (ZVC-R 1266) (B). Grey indicates cartilage; white, ossified elements. bh, basihyal; cb1, first ceratobranchial; cb2, second ceratobranchial; ch, ceratohyal; e, entoglossal (= lingual process); hh, hypohyal (= anterior processes of basihyal).

Table 1. Standard statistics for meristic and morphometric characters of *Cnemidophorus charrua* new sp. (abbreviations as in Materials and Methods). Measurements in mm.

	Males (*n*=3)				Females (*n*=6)			
	Range	Mean	SD	Median	Range	Mean	SD	Median
DS	84–94	89.33	5.03	90	81–98	90.67	7.50	93
SPV	16–94	64.67	42.44	84	12–81	29.67	26.21	20.5
NRS	201–206	203.67	2.52	204	208–229	216.83	7.68	214
TVS	32–34	33.00	1.00	33	33–35	33.67	0.82	33.5
LVS	10	10	0.00	10	10	10	0.00	10
SLB	6–7	6.67	0.58	7	7–8	7.33	0.52	7
ILB	5–6	5.33	0.58	5	5–7	6.17	0.75	6
SOC	3	3	0.00	3	3–4	3.17	0.41	3
PAP	5–7	5.67	1.15	5	5	5	0.00	5
FP	19–22	20.33	1.53	20	19–21	20.17	0.75	20
FFS	13–14	13.67	0.58	14	13–15	14.17	0.75	14
FTS	20–25	23.00	2.65	24	21–24	22.33	1.21	22.5
SAT	27–28	27.33	0.58	27	24–29	27.33	1.86	27.5
SVL	57.6–66.6	61.2	4.75		57.7–75.2	67.7	6.97	
HL	14.9–16.6	15.7	0.84		13.7–17.0	15.5	1.24	
SL	4.5–5.4	5.0	0.42		4.8–5.7	5.3	0.34	
HD	6.6–8.5	7.5	0.94		6.7–8.6	7.6	0.80	
AG	28.4–33.1	31.0	2.39		27.6–39.2	34.9	4.71	
HL/SVL	0.25–0.26	0.26	0.01		0.22–0.25	0.23	0.01	
SL/HL	0.30–0.32	0.31	0.01		0.32–0.35	0.34	0.01	
AG/SVL	0.48–0.55	0.51	0.04		0.48–0.56	0.51	0.03	
SN/SPR	0.37–1.08	0.71	0.36		0.00–1.11	0.52	0.39	
PN/LO	0.53–0.58	0.55	0.03		0.41–0.88	0.61	0.16	
SPV/DS	0.18–1.00	0.73	0.47		0.12–1.00	0.34	0.33	

wider than long and in partial contact in the midline; the second quadrangular and the third longer than wide; the last two decreasing gradually in size. A field of polygonal or oval scales between chin shields, decreasing in size towards the gular region. Gulars round to oval, increasing in size and becoming polygonal at the gular fold. Well defined gular fold, mesoptychial scales larger than granular scales lining the interior of the fold and the rest of ventral side of neck. Scales on nape and sides of the neck granular. Dorsal and flank scales granular, convex; 94 scales across midbody, 201 scales in a mid-dorsal line from the nape to the base of the tail.

A field of large polygonal imbricate scales, roughly arranged in five rows, on upper chest between insertion of humeri. Posterior to them a series of ventral plates, smooth, mostly rectangular, wider than long, becoming square laterally and posteriorly, the most lateral in each row having curved lateral sides. Nine scales in the row between axillae; 10 midventrally; 9 in the last transverse row, near groin. At lateral extremes of all rows, 1–3 scales smaller than regular ventrals just before the granules of flanks. Transverse rows of ventrals 32 on midventral line. Four large preanal plates, polygonal, preceded by a row of three slightly smaller scales, all surrounded by scales gradually decreasing to sides. Fields of granules anterior and posterior to vent. Anal spurs absent.

On the forelimbs, suprabrachial and posterobrachial scales rhomboidal, imbricate, in longitudinal rows to the elbow; those of anteriormost row largest. Axillary, prebrachial and infrabrachial scales granular, small. Antebrachial scales granular, juxtaposed, except anterodorsally where they are large imbricate plates, wider than long, gradually increasing in width towards the hand. Hand pentadactyl, with short but sharp claws. Palm granular, larger scales proximal to wrist. Subdigital lamellae smooth, 14 under left fourth finger. Hand dorsum with rows of scales wider than long arranged along the axis of each digit. Between the rows, smaller granular scales.

Femoral scales granular, juxtaposed, on the dorsal and posterior surfaces of thigh. Large imbricate plates anterior to the row of femoral pores, reaching the knee. Femoral pores 19 in total. Tibial scales granular and juxtaposed dorsally; large and imbricate ventrally. Foot pentadactyl, thin digits with short claws. Foot dorsum with regular imbricate scales; sole finely granular. Subdigital lamellae smooth, 20 under the left fourth toe.

Scales on tail dorsum quadrangular, keeled, slightly mucronate, becoming gradually longer than wide from the tail base to tip; oblique keels on the scale surface forming relatively continuous carinae. Proximal ventral and lateral tail scales more square than those on dorsum, imbricate, becoming progressively keeled distally, but less markedly than in dorsals.

Coloration in preservative (70% ethanol). Dorsum dark grey; back without any trace of stripes, either light or dark. All the large top head scales, brown. Ventral surfaces of head, body, limbs and tail pearly white.

Fig. 5. Partial view of Cabo Polonio, Rocha Department, Uruguay, type locality of *Cnemidophorus charrua.*

Fig. 6. The rocky grassland habitat of *Cnemidophorus charrua.* In the background, the Atlantic Ocean.

Variation

Meristic and morphometric variation data for nine specimens of *Cnemidophorus charrua*, including the type series, are presented in Table 1. There is no variation in the number of longitudinal rows of ventral plates at the midventral point (10 in all individuals, with small additional scales on the extremes of the rows in some specimens). The HL/SVL ratio is slightly higher in males (mean = 0.26) than in females (mean = 0.23), but the SL/HL ratio shows the inverse, with females having a longer snout (mean = 0.34) than males (mean = 0.31).

The colour pattern varies from totally unstriped (MNHN 3423; ZVC-R 1856, 1865) to showing two thin white stripes on each side, with feeble-to-null expression of black bars between them (MNHN 3422, 3424; ZVC-R 2505, 2506, 2519, 2520). Both patterns are represented in males and females. An intermediate condition is shown by CM 65052, which has a grey dorsum with a greenish vertebral strip but still bears two feeble light stripes on the flanks (Fig. 3). We did not see subadults but, according to Cole et al. (1979), there is no ontogenetic variation. A pair of thin paravertebral light stripes (PVS), some discontinuous, is present in 1/3 of the males and in three out of six female *Cnemidophorus charrua*. On the contrary, the PVS is absent in the 25 specimens (15 males, 10 females) of Uruguayan *C. lacertoides sensu stricto* examined by us.

The scales on the ventral surface of the head lack dark spots; only a few individuals exhibit some diffuse, irregular marks on some scales. In contrast, the most lateral ventral scales of the body are regularly completely dark along the belly, marking a clear-cut chromatic distinction between them and the rest of the ventral scales, which are all white. This last feature is less evident or lacking in females.

Geographic distribution

Cnemidophorus charrua is known only from the type locality, Cabo Polonio, Rocha Department, on the Atlantic coast of Uruguay, in a habitat of rocky grassland (Figs 5–6). At the time that collections were made, the lizards could easily be seen on the rocks of the cape, seeking shelter in crevices when disturbed. Although the population seemed healthy when observed in the early 1970s, no individuals have been found since 1977.

Etymology

The specific epithet is a noun in apposition derived from the old Charrúa race of South American aborigines. In a parallel fate with the new species, the Charrúa race were the natural inhabitants of the present Uruguay and were diluted or exterminated by foreign ingression.

DISCUSSION

The population described here as a new species was discovered by Federico Achaval and was first referred to in Cole et al. (1979), who noted “reduced expression of the colour pattern [in specimens] at Cabo Polonio”. In their study they were unable to find noteworthy differences in three external characters and karyotypes between one of these specimens and those referable to *Cnemidophorus lacertoides*. *Cnemidophorus charrua* does not differ significantly from *C. lacertoides sensu stricto* in the number of scales across the midbody (81–98 vs 74–102 in the latter; Cole et al., 1979 and unpubl. data). However, the overlapping of character states is more frequent in *Cnemidophorus* species than in other lizard genera (McCrystal & Dixon, 1987; Cei & Scrocchi, 1991; Feltrim & Lema, 2000; Colli et al., 2003).

We consider *Cnemidophorus charrua* a species differentiated under the peculiar conditions of geographic isolation that modelled the cape and the relationship of this formation with the mainland (Martínez et al., 2001). The Cabo Polonio cape is a granitic outcrop united with the landmass from the Holocene by a sandy conection not higher than 5 m above sea level. The cape itself may have been a small island during Quaternary marine ingressions and the nearby Castillos lagoon was a gulf connected with the sea (Martínez & Rojas, 2006).

Because records or sightings of *Cnemidophorus charrua* are lacking from three decades to date and due to

the circumscribed location of the cape, surrounded by dunes unsuitable to lizard life except for the psammophile *Liolaemus wiegmannii*, extant there (Carreira et al., 2005), we must assume that this taxon is most probably extinct. Thorough fieldwork done by us in 2007 at the cape yielded several *Cercosaura schreibersii* and *Teius oculatus* individuals, but no *Cnemidophorus*. A previous survey made between 1999 and 2002 was equally unfruitful (López, 2006). It seems likely that the increasing human settlement of Cabo Polonio by people, followed by their dogs and cats, and massive tourism, particularly during the summer months, the lizards' reproductive season, could have caused their extinction.

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APPENDIX

Specimens examined

The specimens are referred to by their catalogue number. Acronyms are: CM, Carnegie Museum of Natural History, Pittsburg, USA; FML, Fundación Miguel Lillo, Tucumán, Argentina; LJAMM and RVP, L. Avila and M. Morando Collections – Centro Nacional Patagónico, Puerto Madryn, Argentina; MACN and MACN (exCENAI), Museo Argentino de Ciencias Naturales, Buenos Aires, Argentina; MLP, Museo de Ciencias Naturales, La Plata, Argentina; MNHN, Museo Nacional de Historia Natural, Montevideo, Uruguay; UFRGS, Universidade Federal de Rio Grande do Sul, Porto Alegre, Brazil; UNNEC, Colección Herpetológica Universidad Nacional del Nordeste, Corrientes, Argentina; ZVC-R, Zoología de Vertebrados, Facultad de Ciencias, Universidad de la República, Montevideo, Uruguay.

Cnemidophorus charrua

Uruguay

Departamento Rocha: Cabo Polonio, MNHN 03422/24; ZVC-R 1856, 1865, 2505/06, 2519/20; CM 65052 *(photos)*.

Cnemidophorus lacertoides sensu lato

Argentina

Buenos Aires: Partido de Tornquist: Abra de la Ventana, MACN 20862. Sierra de la Ventana, MACN (ex CENAI) 336, 339, MLP.S 967. Sierra de la Ventana, Parque Provincial Tornquist, MACN 32864, 32867, 32868, 32874/76, 32878, MLP.S 1049/51, 1564/65. Sierra de la Ventana, Villa Ventana, MLP.S 1052/54.

Catamarca: Catamarca (no further data), MLP.S 419, 423, 430, 446.

Córdoba: Departamento Rio Cuarto: Achiras, MLP.S 1165/66.

Uruguay

Departamento Artigas: Nacientes del Arroyo Pintado, ZVC-R 4835/36.

Departamento Paysandú: Ruta 90 Establecimiento "El Refugio", ZVC-R 4889; ruta 26, Km 147, entre Arroyo Laureles y Arroyo Perdido, ZVC-R 5361.

Departamento Rivera: Gajo Arroyo Lunarejo, ZVC-R 5119; Puntas del Arroyo Lunarejo, ZVC-R 4518/19.

Departamento Salto: Estancia "El Tapado", ZVC-R 4700.

Departamento Tacuarembó: Camino Valle Edén, ZVC-R 5306; Pozo Hondo, ZVC-R 5139, 5413; Pozo Hondo, ruta 26, Km 200, ZVC-R 5233; Valle Edén, ZVC-R 4504.

Cnemidophorus lacertoides sensu stricto

Uruguay

Departamento Lavalleja: Asperezas de Polanco, ZVC-R 5042/43; Ruta 8, Km 131 Establecimiento "El Penitente", ZVC-R 5350.

Departamento Maldonado: Cerro de Animas, MLP.S 965, 1065; Ruta 60, ZVC-R 5304; Sierra de Animas, ZVC-R 3891, 4358/59.

Departamento Montevideo: Cerro de Montevideo, ZVC-R 1265/66.

Departamento Rocha: Castillos, MACN 1127/28; Parque Nacional de San Miguel, ZVC-R 1810.

Departamento San José: Sierra de Mahoma, ZVC-R 5566.

Departamento Treinta y Tres: Quebrada de los Cuervos, ZVC-R 1348, 1351, 1353, 1355, 1382, 4569/70, 4578, 4751; Santa Clara de Olimar, ZVC-R 1263.

Cnemidophorus leachei

Argentina

Salta: Departamento Orán: Río Pescado y Serranía Las Pavas, sección SW del Parque Nacional Baritú, MACN 32299. Departamento Rosario de la Frontera: Rosario de la Frontera, MLP.S 1064.

Cnemidophorus longicauda

Argentina

Córdoba: Departamento Cruz del Eje: La Batea, MLP.S 201, 203, 205/11.

La Pampa: Departamento Chical-Có: Chical-Có, RVP 92/96; 5.1 km E La Ahumada, ruta provincial 10, LJAMM 4025. Departamento Puelén: Puelén, RVP 175; 7 km NE Casa de Piedra, LJAMM 2118/20, 2179.

Mendoza: Departamento Luján: Chacras de Coria, MLP.S 107, 110. Departamento Malargüe: Malargüe, Cihueco, MLP.S 968; Los Frisos, 5 km N El Zampal, ruta nacional 40, LJAMM 4054/55; 8.3 km S Malargüe, ruta nacional 40, LJAMM 4059; 18.2 km N Costa de Araujo, ruta nacional 142, LJAMM 4070; 21 km S cruce a El Clavado, sobre ruta provincial 180, LJAMM 5097/98, 5142; 100 km S Gobernador Ayala, ruta provincial 180, LJAMM 5100. Departamento San Rafael: San Rafael, LJAMM 1828.

Neuquén: Departamento Añelo: 28.7 km N Añelo, ruta provincial 7, LJAMM 5704. Departamento Confluencia: Confluencia, Tiro Federal, MLP.S 948; 10 km SE Challacó, Yacimiento Divisadero Gral. San Martín, LJAMM 163/78. Rio Negro: Departamento Avellaneda: Chelforo, LJAMM 21; Chimpay, LJAMM 40/51, 53, 57/62, 1690/91.

Cnemidophorus ocellifer sensu lato

Argentina

Corrientes: Departamento Bella Vista: Bella Vista, UNNEC 1106; Bella Vista, Barrancas, MLP.S 951. Departamento Itatí: Yacareí, UNNEC 01099. Departamento Ituzaingó: Ituzaingó, MACN 36807, UNNEC 01090, 01981; Rincón Santa María, UNNEC 01101. Departamento San Miguel: Colonia Madariaga, UNNEC 01071/73, 01075/81, 01097/98; Curuzú Laurel, UNNEC 06994, 07116; Colonia Caimán, UNNEC 01315/16, 01988.

El Chaco: Departamento Almirante Brown: Kolbas, UNNEC 00007; Taco Pozo, UNNEC 01827, 01829/32. Departamento Bermejo: El Remanso, UNNEC 05663/64. Departamento General Güemes: Comandancia Frías,

UNNEC 00005/00006; Simbolari, UNNEC 04586; Nueva Pompeya, UNNEC 00001, 00003, 01104/05, 01095. Departamento Libertador General San Martín: Selvas del Rio de Oro, UNNEC 06524/26, 06528.

Formosa: Departamento Bermejo: La Libertad, UNNEC 05676, 05681, 05692, 06826.

Santiago del Estero: Departamento Alberdi: Monte Quemado, UNNEC 01102/03; Parque Nacional Copo, Paraje Florencia, UNNEC 04568, 06475, 06480/81, 06523; Coronel Rico, UNNEC 06478. Departamento Choya: Choya, MACN (ex CENAI) 92, 93-A, 93-C; Villa La Punta, MLP.S 1026. Departamento Robles: Beltrán, MLP.S 413, 555, 964; Turena, MLP.S 695.

Cnemidophorus serranus

Argentina

Córdoba: Departamento Calamuchita: El Sauce, MACN 2584; Departamento Colón: Cabana, MACN 12509; Departamento Punilla: Cosquín, MACN 36176; Cruz Chica, MACN 29625; Icho Cruz, FML 02053-1 *(holotype)*, FML 02053-2/3 *(paratypes)*; Tanti, MACN 10247, UNNEC 01083; Los Chorrillos, MLP.S 1163; Carlos Paz, Estancia Vieja, MLP.S 1164. Departamento Santa María: Alta Gracia, La Granja, MLP.S 1305.

Cnemidophorus tergolaevigatus

Argentina

Catamarca: Departamento Belén: 11 km E Belén, ruta provincial 46, LJAMM 4259, 4262; Puerta de Corral Quemado, ruta provincial 43, LJAMM 4279/80. Departamento Santa María: Santa María, MLP.S 1716; 21.2 km E Los Nacimientos sobre ruta nacional 40, FML 02981; Ruta provincial 47, 20 km S Punta de Balasto, LJAMM 4271; Ruta nacional 40, 6 km W Punta de Balasto, LJAMM 4274/75. Departamento Tinogasta: ruta nacional 40, 45 km W Los Nacimientos (Campo Arenal), FML 03553; Los Medanitos, FML 03554; Km 1298 sobre ruta nacional 40 y Río La Puerta, LJAMM 2321; 16 km S Palo Blanco, ruta provincial 34, LJAMM 2341/43, 2346.

La Rioja: Departamento Arauco: 1 km S Bañados de los Pantanos, LJAMM 4181. Departamento Castro Barros: Anillaco, LJAMM 1028, 1032, 1034; 6 km E Anillaco, LJAMM 596, 836, 1027, 1029/31, 1035, 1833; 10 km E Anillaco, LJAMM 1994, 1997/98. Departamento Chilecito: Chilecito, MACN 6827 *(holotype)*, MLP.S 105. Departamento Famatina: 9.2 km de la plaza central de Pituil, sobre ruta provincial 11, FML 02978; Km 657 sobre ruta nacional 40, 9 km E Pituil, LJAMM 4153; 9.9 km W Antinaco, FML 02980-1, 02980-2. Departamento San Blas de los Sauces: 2.1 km W Alpasinche sobre ruta nacional 60, LJAMM 4263, 4265.

Salta: Departamento Cafayate: Los Médanos, 0.5 km E ruta nacional 68 y 6.7 km de la confluencia entre rutas 68 y 40, FML 03552.

Cnemidophorus vacariensis

Brazil

Rio Grande do Sul: Município de Vacaria, and Município de Bom Jesus *(pictures in life of several uncollected specimens)*.

Santa Catarina: Capão Alto,UFRGS 3996/99 *(colour photos showing several aspects of each specimen)*.