



Two new species of *Cnemidophorus* (Squamata: Teiidae) from the Caatinga, Northwest Brazil

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Abstract

Two syntopic species of *Cnemidophorus* are described from the Caatingas of the Parque Nacional da Serra das Confusões (PNSC), located in the Southwestern region of the state of Piauí in Brazil. Both species are assigned to the ocellifer group, differing from all other members of the group by their distinct color pattern and lepidosis. Besides these differences, both new species share a number of particular features with other members of the group. One of them, *C. venetacaudus*, shares with *C. abaetensis* and *C. littoralis* the presence of spurs in the heels of males, six supraciliar scales, a high number of femoral pores (from 21–45), a row of enlarged scales in the dorsal region of the arm, 8–10 rows of ventral scales, and a bright bluish-green tail, while the other species, *C. confusionibus*, shares with *C. ocellifer*, *C. mumbuca*, and *C. jalapensis* a low number of femoral pores, enlarged scales in the temporal region (posterior to third subocular), 5 supraciliar scales, and 6–8 rows of ventral scales. Based on these comparisons, we suggest that the ocellifer group is more complex than previously admitted, being composed by at least two morphologically recognizable species subgroups.

Key words: Lizards, *Cnemidophorus*, ocellifer group, Serra das Confusões, Caatinga, Northwest of Brazil

Resumen

En el presente trabajo se describen dos sintópicas especies de *Cnemidophorus* de las Caatingas del Parque Nacional da Serra das Confusões (PNSC), localizado al sudoeste del estado de Piauí. Ambas especies descritas son asignadas al grupo ocellifer, ya que presentan los caracteres diagnósticos del mismo, pero a su vez muestran importante variación en el patrón de coloración como así también en la lepidosis, que las distinguen del resto de las especies. Una de ellas, *C. venetacaudus*, comparte con *C. abaetensis* y *C. littoralis* la presencia de espinas en los talones de los machos, seis supraciliares, un elevado número de poros femorales (de 21 a 45), una hilera de escamas agrandadas en la región dorsal del húmero, de 8 a 10 hileras de escamas ventrales y la cola de color verde azulada, mientras que la otra especie, *C. confusionibus*, comparte con *C. ocellifer*, *C. mumbuca* y *C. jalapensis* un bajo número de poros femorales (de 11 a 21), escamas agrandadas en la región temporal (posterior a la 3^o subocular), 5 supraciliares, de 6 a 8 hileras de escamas ventrales, entre otros. En base a estas comparaciones, sugerimos que el grupo ocellifer es un complejo de especies compuesto por al menos dos subgrupos de especies morfológicamente distinguibles.

Introduction

Until recently, the genus *Cnemidophorus* was considered one of the most speciose and widely distributed teiid genus, with more than 60 known species ranging from Northern United States to Central Argentina (Wright, 1993; Reeder *et al.*, 2002; Colli *et al.*, 2003a). Recently, Reeder *et al.* (2002) resurrected *Aspidoscelis* to include most

North and Central American taxa formerly included in *Cnemidophorus* (Rocha *et al.*, 1997; Feltrim & Lema, 2000; Dias *et al.*, 2002; Reeder *et al.*, 2002; Colli *et al.*, 2003; Cabrera, 2004; Cabrera and Carreira, 2009; Guigliano *et al.*, 2006), thus restricting the latter genus to South America.

The known diversity of *Cnemidophorus* has grown notably recently, with 10 new species described in the last 10 years (Feltrim & Lema, 2000; Rocha *et al.*, 2000; Dias *et al.*, 2002; Colli *et al.*, 2003a; Colli *et al.*, 2003b; Cabrera, 2004; Colli *et al.*, 2009; Cabrera and Carreira, 2009; Ugueto *et al.*, 2009). The genus is presently composed of 25 species (Colli *et al.*, 2009), arranged into four species groups: lemniscatus, ocellifer, lacertoides and longicauda.

Species of the lemniscatus group inhabit northern South America and are promptly distinguished from all other species by the presence of preanal spurs in males and by a higher number of femoral pores (more than 40; Ávila-Pires, 1995). Six species belonging to the lemniscatus group occur in the Lesser Antilles, near Venezuela, (*C. murinus* Laurenti 1768, *C. arubensis* Lidth de Jeude 1887, *C. vanzoi* Baskin & Williams 1966, *C. nigricolor* Peters 1873, *C. flavissimus* and *C. senectus* Ugueto, Harvey & Rivas 2010), while the five remaining species are distributed in open areas of the Amazonian basin (*C. lemniscatus* Linnaeus 1758, *C. gramivagus* Mc Crystal & Dixon 1987, *C. arenivagus* Markezich, Cole & Dessauer 1997, *C. cryptus* and *C. pseudolemniscatus* Cole & Dessauer 1993). Among the Amazonian species, *C. cryptus* and *C. pseudolemniscatus* are known to be parthenogenetic (Cole and Dessauer, 1993).

The ocellifer group comprises seven species, distinguished by the presence of granules in the supraorbital semicircles, a lower number of femoral pores (less than 40), and the absence of preanal spurs (Rocha *et al.*, 2000, Colli *et al.*, 2003b). This group includes *C. ocellifer* Spix 1825, a widespread and artificially defined species that ranges from northeastern Brazil to Argentina (Vanzolini *et al.*, 1980, Peters and Donoso-Barros, 1970, Cei, 1993), and six other Brazilian species previously mistaken with the latter and described in recent years (Rocha *et al.*, 1997; Rocha *et al.*, 2000; Dias *et al.*, 2002; Colli *et al.*, 2003a; Colli *et al.*, 2003b; Colli *et al.*, 2009). Three of them are restricted to the Brazilian “restingas,” open sandy habitats along the coast: *C. nativo* Rocha, Bergallo & Peccinini-Seale 1997, from Linhares, state of Espírito Santo; *C. littoralis* Rocha, Bamberg Araújo, Vrcibradic & Mamede da Costa 2000, from Barra de Maricá, state of Rio de Janeiro; and *C. abaetensis* Dias, Rocha & Vrcibradic 2002, from Salvador, state of Bahia. The other three species are from the Cerrado of central Brazil: *C. mumbuca* Colli, Caldwell, Costa, Gainsbury, Garda, Mesquita, Filho, Soares, Silva, Valdujo, Vieira, Vitt, Werneck, Wiederhecker & Zatz 2003, from Mateiros, state of Tocantins; *C. parecis* Colli, Costa, Garda, Kopp, Mesquita, Pérez Jr, Valdujo, Vieira & Wiederhecker 2003, from Vilhena, state of Rondônia; and *C. jalapensis* Colli, Giugliano, Mesquita & Franca 2009, from Ponte Alta, state of Tocantins. Among these, only *C. nativo* is unisexual (Rocha *et al.*, 1997).

The lacertoides group (Cei, 1993) comprises five species that can be distinguished from the other groups of *Cnemidophorus* by their suborbital semicircles lacking granules, a tongue that is bilobed posteriorly (instead of basally as in other species) (see Cei, 1993), and 10 longitudinal rows of ventral scales (Dies *et al.*, 2002, Cabrera and Carreira, 2009). *Cnemidophorus lacertoides* Duméril & Bibron 1839, inhabits Argentina, Uruguay, and Southern Brazil (Peters and Donoso-Barros, 1970), *C. serranus* Cei & Martori 1991, occurs in the Sierras of Córdoba and the Copo-Chaco National Park (Cei and Martori, 1991; Arias and Lobo, 2006) in Argentina; *C. leachei* Peracca 1897, occurs in the province of Jujuy, Argentina (Cei and Scrocchi 1991); *C. vacariensis* Feltrim & Lema 2000, is restricted to the open areas of the state of Rio Grande do Sul, Brazil (Feltrim & Lema, 2000); and *C. charrua* Cabrera & Carreira 2009, was known only from Cabo Polonio in the Atlantic coast of Uruguay, and is now probably extinct (Cabrera and Carreira, 2009).

Finally, the longicauda group includes two species, *C. longicauda* Bell 1843, and *C. tergolaevigatus* Cabrera 2004, that occur in the region known as Monte Desert, extending from northwestern to southwestern Argentina (Cabrera, 2004; Yoke *et al.*, 2006). These species are characterized by the presence of an “opercular” projection of skin in the anterodorsal margin of the ears (Cabrera, 2004), among other features (Arias *et al.*, unpubl. data).

Between 2000 and 2002, H. Zaher and M. T. Rodrigues conducted an intensive survey of the terrestrial vertebrate fauna of the Parque Nacional da Serra das Confusões (PNSC). The park is located in the southeastern part of the State of Piauí, near the border of the state of Bahia (Rodrigues *et al.*, 2001; Bour and Zaher, 2005), an area physiologically dominated by the semiarid Caatinga. The survey of the area yielded a diverse collection of reptiles, some of them new and already described (Rodrigues *et al.*, 2001; Bour and Zaher, 2005; Nogueira and Rodrigues, 2006). In this paper, we describe two new and very conspicuous species of *Cnemidophorus* obtained in the

area that, based on our present concept of the genus *Cnemidophorus*, should be allocated in the ocellifer group. We further subdivide the ocellifer group in two formally recognized subgroups, based on the new morphological evidence provided by the new species described herein.

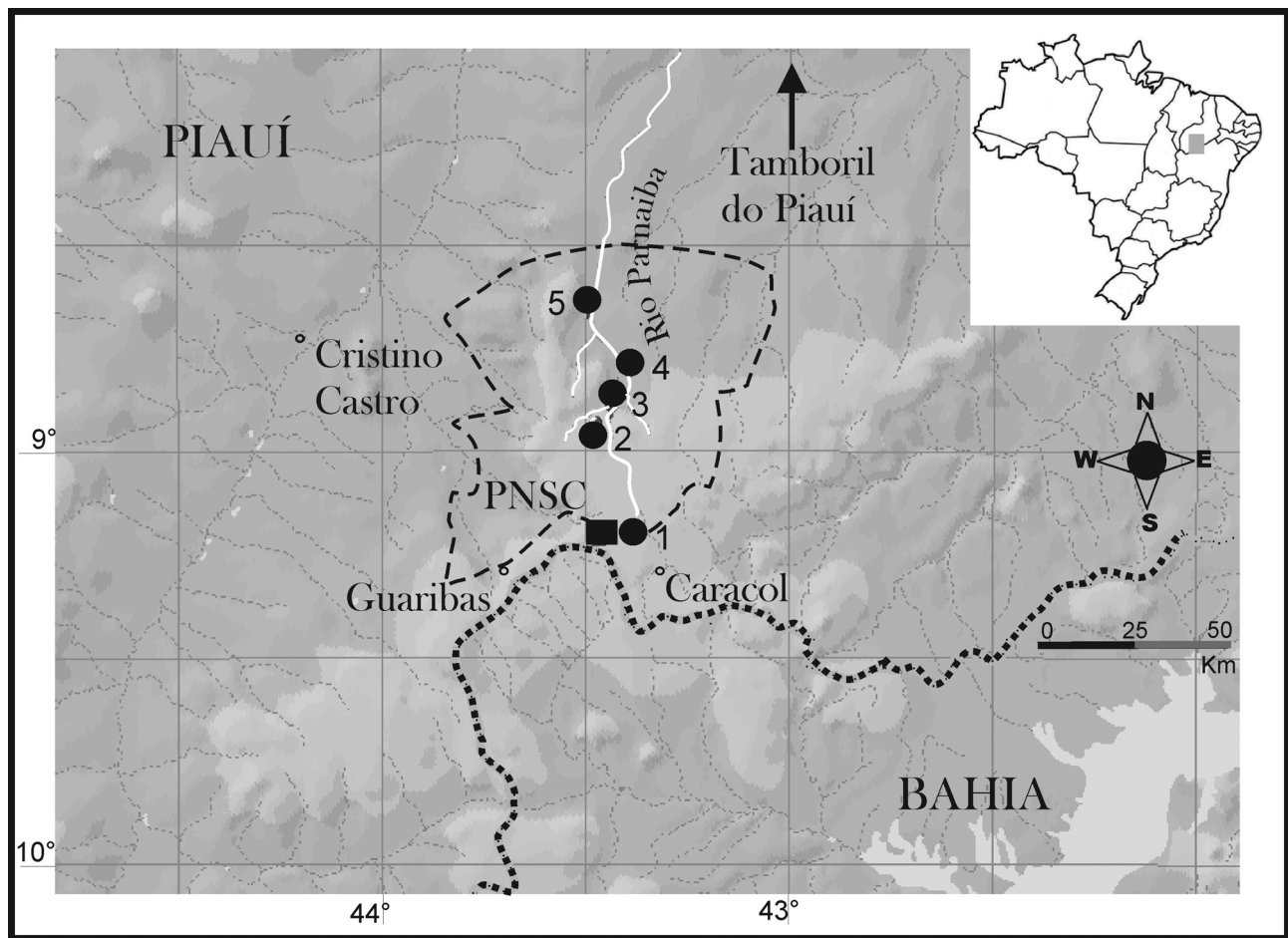


FIGURE 1. Distribution of *Cnemidophorus confusionibus* and *Cnemidophorus venetacaudus* in the Parque Nacional da Serra das Confusões (PNSC), Piauí, Brazil. Black circles= *C. confusionibus*; black squares= *C. venetacaudus*. Localities: 1) Ôlho D'Água da Santa, 2) Morrinhos, 3) Toca da Cabocla, 4) Canto Verde, and 5) Lagoa do Jacú.

Material and methods

Specimens belonging to the two new species were collected with the aid of guns, rubber bands, and pitfall traps with drift fences, during the period of September 2000 to June 2002.

The following scale counts were taken in all examined specimens: supraocular scales on right side; supraciliar scales on right side; femoral pores on both sides; longitudinal rows of ventral scales; transverse rows of ventral scales from the gular fold to the anterior margin of hindlimbs; subdigital lamellae under the fourth finger; subdigital lamellae under the fourth toe; longitudinal rows of enlarged scales in the dorsal region of the arm; scales around midbody, excluding ventrals and counted midway between fore- and hindlimbs; enlarged scales in the preanal plate; scales around the tail, counted on the fourth transverse row; dorsal scales, counted along the midline, from the occiput to the first transverse row of scales around the tail. Additionally, we registered the presence or absence of enlarged scales in the temporal region, posterior to the third subocular, as well as presence or absence of spurs in heels of males.

The following measurements were taken in mm: snout–vent length (SVL); head length (HL); head height (HH), head width (HW), trunk length (TL), tail length (TL), humeral length (HuL), forelimbs length (FL), tibia length (TL), femur length (FeL), and hindlimbs length (HiL). Scale observation and measurements were taken using a digital caliper to the nearest 0.02 mm, under a stereomicroscope (10–40x).

For the sake of comparison, we used data on *Cnemidophorus abaetensis*, *C. littoralis*, *C. mumbuca*, *C. jalapensis*, *C. ocellifer* (only from Salvador, Bahia, the type locality), and *C. nativo*. These specimens are deposited at the Museu de Zoologia da Universidade de São Paulo (MZUSP), and Museu Nacional do Rio de Janeiro (MNRJ) (Appendix 1). *Cnemidophorus parecis* was not used in comparisons because we consider that the diagnostic features of this species preclude its inclusion in the ocellifer group as presently conceived (see discussion).

We also added to our comparisons with the new species data taken from the original descriptions of *C. jalapensis* (Colli *et al.*, 2009) and *C. littoralis* (Rocha *et al.*, 2000). Color pattern terminology for *Cnemidophorus* follows Walker *et al.* (1997).

Results

Cnemidophorus confusionibus sp. nov.

(Fig. 2, 3)

Holotype. MZUSP 100193 (field number MRT 4629), adult male, from Toca da Cabocla (8 5528" S, 43 2658" W), Parque Nacional da Serra das Confusões, Caracol municipality, state of Piauí, Brazil, elevation 450 m, collected by Hussam Zaher, Miguel T. Rodrigues and Felipe Curcio on 7 October 2000.

Paratypes. MZUSP 100187, 100188, 100190, 100191 (field numbers respectively MRT 4547, 4548, 4565, 4572), Canto Verde (8 5025" S, 43 2350" W), collected by Hussam Zaher, Miguel T. Rodrigues, and Felipe Curcio, from 28–30 September 2000; MZUSP 100189, 100203 (field MRT 4559, 4925), Morrinhos (8 5738" S, 43 2650" W), collected by Hussam Zaher, Miguel T. Rodrigues and Felipe Curcio, from 29.ix–1.x.2010; MZUSP 100192, 100194, 100195, 100198, 100202, 100204, 1000205 (field MRT 4587, 4635, 4636, 4700, 4919, 4940, 4948), Toca da Cabocla (8 5528" S, 43 2658" W), collected by Hussam Zaher, Miguel T. Rodrigues, and Felipe Curcio from 30.ix–8.x.2000; MZUSP 100196, 100197, 100199, 100201, Ôlho D'Água da Santa (9 1310" S, 43 2927" W), collected by Hussam Zaher, Miguel T. Rodrigues, and Felipe Curcio from 4–6 October 2000; MZUSP 100200 (field 4919), Lagoa do Jac (8 4037" S, 43 2909" W), collected by Hussam Zaher, Miguel T. Rodrigues and Felipe Curcio on 5 October 2000. All localities from Parque Nacional da Serra das Confusões, Caracol Municipality, state of Piauí, Brazil.

Diagnosis. A species of the ocellifer group with granules in the supraorbital semicircles, and no anal spurs in males. *Cnemidophorus confusionibus* differs from all the other members of the ocellifer group by color pattern and a high number of lamellae on the fourth toe. In addition, differs from *C. jalapensis* by having 18–20 ($x = 17.5$) femoral pores (11–16, $x = 13.3$ in *C. jalapensis*), 22–28 ($x = 24.9$) scales around tail (19–26, $x = 22.7$), 29–35 ($x = 30.4$) lamellae on the fourth toe (26–28, $x = 27$), lateral spots present (absent), paravertebral stripes absent (present), gular region and ventrolateral aspect of head immaculate (lime-green), and larger body size (smaller body size, SVL = 53.45 mm). *Cnemidophorus confusionibus* differs from *C. mumbuca* by having 29–35 ($x = 30.4$) lamellae on the fourth toe (24–32, $x = 27.4$ in *C. mumbuca*), paravertebral stripes absent (present), dorsolateral stripes incomplete and extending from behind the nape region to the first one-third of the tail (dorsolateral stripes, incomplete, extending from behind supraciliary region), one dark brown lateral band, (dorsolateral and lateral band, ochre), a longitudinal row of bright yellow spots on lower flank (bluish white spots, only males). *Cnemidophorus confusionibus* differs from *C. ocellifer* by having 18–20 ($x = 17.5$) femoral pores (14–17, $x = 16$ femoral pores in *C. ocellifer*), 188–211 ($x = 201.6$) dorsal scales (172–188, $x = 181$), paravertebral stripes absent (present), dorsolateral stripes extending from behind nape region to first one-third of tail (dorsolateral stripes extending from behind supraciliary region), 2–3 lateral spots only in the axial region (lateral spots present, from fore to hind limbs), and dorsal surface of hindlimb without freckling (dorsal surface of hindlimb with black freckling). *Cnemidophorus confusionibus* differs from *C. nativo* by having 18–20 ($x = 17.5$) femoral pores (24–26, $x = 24$ in *C. nativo*), 27–29 ($x = 28.2$) ventral rows (29–32, $x = 30.8$), nostril opens usually in the suture between anterior and posterior nasal plates (nostril opens in the anterior nasal plate), second subocular contacts fifth and sixth supralabials ventrally (contacts fourth, fifth, and sixth supralabials ventrally), mid-dorsal stripe absent (present and with a posteriorly undulating margin), ventral surface of the head, body, and tail predominantly immaculate (light blue), and bixesual (only females). *Cnemidophorus confusionibus* differs from *C. littoralis* and *C. abaetensis* by having 18–20 ($x = 17.5$) femoral pores (29–

34, $x = 32.6$ in *C. littoralis* and 27–31, $x = 24$ in *C. abaetensis*), 27–29 ($x = 28.2$) ventral scale rows (32–38, $x = 34.9$ in *C. littoralis* and 30–35, $x = 32$ in *C. abaetensis*), 188–211 ($x = 201.6$) dorsal scales (168–191, $x = 174.9$ in *C. littoralis* and 210–240, $x = 221.8$ in *C. abaetensis*), 8 longitudinal ventral scale rows (8 a 10 in *C. abaetensis* and 10 in *C. littoralis*), 5 superciliaries (6 in both species), mid-dorsal stripe absent (present in both species), a brown tail (bright blue-green to emerald green in both species), stripe in the tail absent (present in both species). *Cnemidophorus confusionibus* differs from *C. venetacaudus* sp. nov. (see below) by having 18–20 ($x = 17.5$) femoral pores (34–45, $x = 38$ femoral pores in *C. venetacaudus*), 27–29 ($x = 28.2$) transverse ventral scale rows (30–32, $x = 31.2$), 8 longitudinal ventral scale rows (10), 22–28 ($x = 24.9$) scales around tail (31–34, $x = 31.7$), 87–105 ($x = 95$) scales around midbody (114–129, $x = 119.5$), 188–211 ($x = 201.6$) dorsal scale rows (190–218, $x = 204.8$), 5 superciliaries (6), dorsal stripes present (absent), a lateral row of spots present (absent), and a smaller body size (large size, SVL = 83.3 mm).



FIGURE 2. *Cnemidophorus confusionibus*, Olho D'Água da Santa, Parque Nacional da Serra das Confusões, Piauí, Brazil. Photo: Miguel Rodrigues

Description of holotype.Measurements: snout-vent-length 71.51 mm; trunk length 39.23 mm; head length 19.28 mm; head width 11.08 mm; head height 9.46 mm; tail length 156.93 mm; femur length 12.33 mm; tibia length 12.05 mm; foot length 25.82 mm; humerus length 5.23 mm, and arm length 22.81 mm.

Snout moderately pointed. Rostral large, wider than high, visible from above, separated from frontonasal by the midline contact between nasals. Anterior and posterior nasal in broad contact by an oblique suture. Nostril rounded, in lower part of suture. Frontonasal sub-hexagonal, as long as wide, contacting nasals and prefrontals. Prefrontals roughly trapezoidal, pentagonal, in broad and straight contact along midline, contacting laterally nasal, loreal and first supraocular. Frontal approximately pentagonal, longer than wide, wider anteriorly; contacting anteriorly part of the first supraocular, but separated from other supraoculars by a row of granules. Two frontoparietals, approximately pentagonal, wider than long and separated from supraoculars by a row of granules. Five parietals, external ones smaller; interparietal sub-pentagonal, longer and wider than others, bordered laterally by medial parietals. Occipital scales irregular and variable in size. Four supraoculars on each side, second and third largest, first in contact with loreal, prefrontal, and first supraciliary. Five supraciliaries on each side, first and second largest, others smaller, sub-equal; only first supraciliary in contact with first supraocular, all others separated from supraoc-

ulars by a row of granules. Loreal single, large, roughly pentagonal and as long as high, in contact with posterior nasal, prefrontal, first supraocular, first supraciliary, preocular, first subocular, and third and fourth supralabials. Preocular narrow, higher than wide, in contact with first subocular, loreal, and small scales in ocular region. Three suboculars on each side, anteriormost keeled, approximately pentagonal, in contact with fourth supralabial; second subocular keeled, longer than anterior one, approximately rectangular, in contact with fourth, fifth and sixth supralabials; third subocular smooth, approximately round. A continuous keel runs from preocular to second subocular. Eight supralabials on each side. Temporal region with irregular scales, central ones granular, ventrally enlarged. A supratemporal row with moderately large scales, decreasing in size posteriad. Ear opening large, elliptic, higher than wide with smooth margins. All dorsal and lateral head scales juxtaposed, smooth (except for keeled preoculars and suboculars). Symphysal as long as wide, anteriorly concave, posteriorly convex, in contact with first infralabials and postsymphysal, forming two wide angles. Postsymphysal single, pentagonal, in contact with first and second infralabials; followed by five pairs of enlarged chinshields on left side, six on right side. First pair of chinshields the largest, in broad contact along midline, in contact with second and third infralabials. The second, third and fourth pairs of chinshields separated from infralabials by a row of small granules. Five infralabials on each side; followed posteriorly by series of small scales extending to labial commissure; first infralabials the smallest. Scales between chinshields anteriorly elongated, granular, becoming gradually larger and rounded toward posterior margin of chinshields. Gular region divided in two areas: anterior one with irregularly shaped, enlarged, mostly rounded and juxtaposed scales, disposed in roughly transverse rows from first pair of chinshields, to an imaginary line uniting the lower margin of ear openings; anterior scales slightly elongate, increasing posteriorly in size and becoming rounded posteriorly. Posterior gular region with a patch of central enlarged granules disposed in transverse rows, laterally with smaller granules and bordered posteriorly by antegular fold. Gular and antegular folds marked by diminute granules; two complete rows of enlarged mesoptychial scales between the two folds. Scales on nape and sides of neck granular, similar to dorsals. Dorsals and flank scales granular, rounded, smooth, sub-imbricate; 188 scales along a middorsal line from nape to base of tail; 87 scales around mid-body (excluding ventrals), 22 scales around tail. Ventral scales large, smooth, imbricated, wider than long, rectangular, in 27 transverse rows; 8 ventral scales in transverse rows across mid-body. Ventral scales separated from scales on flanks by a row of moderately enlarged scales. Preanal plate with three enlarged scales, one central and two posterior ones, all surrounded laterally by smaller flat scales. Preanal spurs absent. Sixteen femoral pores in a continuous row along each thigh, medially with a short gap; 8 on each side. Scales on base of tail rectangular, imbricated, smaller than ventrals, in transverse rows; keeled and slightly mucronated dorsally and laterally; ventrally smooth. Tail scales becoming gradually longer and narrower from the base to tip; subcaudal scales becoming keeled distally. Limbs with large, smooth, imbricate scales on dorsal aspect of upper arms, antero-dorsal aspect of forearms, antero-ventral aspect of thighs, and ventral aspect of lower legs; elsewhere scales small, granular. Upper arms with larger scales, disposed in longitudinal rows. Forearms with one row of enlarged scales, wider than long. Ventral part of thigh with three rows of enlarged flat scales decreasing in size proximally. Lower legs with two rows of enlarged, hexagonal scales, larger than those on ventral part of thigh. Ventral aspect of hands and feet granular; one enlarged tubercle at base of pollex. Sub-digital lamellae single; 17 under left and right fourth fingers; 30 under left fourth toe; and 29 on the right one.

Color in preservative. Dorsal surface of head brown, brownish white laterally; labial and ventral regions immaculate white. Dorsal parts of body, tail, fore and hind limbs brownish green. Paraventral rows bluish white, rest of belly immaculate white. Ventral aspect of tail, fore and hind limbs brownish white. Stripes white.

Color in life. Dorsal parts of body, limbs and tail light brown. A narrow dark brown lateral stripe with a series of two to three small irregularly spaced bright yellow ocelli, decreasing posteriorly in size and conspicuity and extending from the suborbital level to the first third of the tail. Below it a narrower white stripe ventrally bordered by a dark brown color contacts the yellowish ventral color (Fig. 2). Lateral parts of head lighter than dorsum.

Variation. Based on 18 paratypes. Head larger (14.74–19.28 mm; $x = 17.07$ mm), than wide (8.97–12.38 mm; $x = 10.27$ mm). Head height 7.71–10.41 mm ($x = 8.87$ mm). Snout-vent length 59.78–74.82 mm ($x = 67.02$ mm). Tail length 110–175 mm, ($x = 150.48$ mm), 2.13 times longer than SVL. Arm length 5.75–6.5 mm, ($x = 6.11$ mm). Fore limb length 17.57–23.82 mm, ($x = 21.17$ mm). Tibia length 8.99–12.05 mm, ($x = 10.81$ mm). Leg length 10.82–13.43 mm, ($x = 11.72$ mm). Foot length 21.14–28.6 mm, ($x = 24.51$ mm). Hind limb 1.92 times longer than foot. Hind limb length 40.95–53.31 mm, ($x = 47.03$).

There is no apparent sexual dichromatism in adult color pattern. A white dorsolateral stripe is present in MZUSP 100192, while the first, second, third and fourth pairs of chinshields are separated from infralabials by a row of small granules in MZUSP 100203. Variation in other meristic characters is summarized in Table 1.

Etymology. The specific name *confusionibus* derives from the Latin “confusionis” (confusion) + “bus” (from), and refers to the type locality (Serra das Confusões) where the new species is found.

TABLE 1. Character variation (range in parentheses) for seven members of the ocellifer group. Supraocular scales (SO); supra-ciliar scales (SC); fourth finger lamellae (FFL); fourth toe lamellae (FTL); number of granules around midbody (SAM); number of scales around tail (SAT); number of dorsal granules (D); longitudinal rows of enlarged scales in the dorsal part of arm (RH); longitudinal rows of ventral scales (VL); transverse rows of ventral scales (VT); total number of femoral pores (FP); enlarged scales in temporal region posterior to third subocular (EST); spurs in heel of males (HSPUR).

Character	<i>C. confusionibus</i> sp nov. (n= 19)	<i>C. jalapensis</i> (n= 2)	<i>C. mumbuca</i> (n= 11)	<i>C. ocellifer</i> (n= 52)
SO	4 (4-4)	4 (4)	3.9 (3-5)	4 (4-4)
SC	5 (5)	5 (5)	5 (5)	5 (5)
TV	28.2 (27-29)	25.9 (26-29)	27 (24-29)	27.2 (26-28)
LV	8 (8)	7 (6-8)	8.0 (6-8)	8 (8)
FP	17.5 (16-21)	13 (12-14)	16.7 (14-20)	16 (14-17)
FFL	15.6 (15-17)	15.5 (15-16)	16.3 (13-19)	16 (15-17)
FTL	30.4 (29-35)	27 (26-28)	27.4 (24-32)	30 (28-31)
RH	3 (3)	3 (3)	3 (3)	3 (3)
SAM	95 (87-105)	96.5 (91-102)	101.0 (91-117)	94.6 (92-100)
SAT	24.9 (22-28)	24 (22-26)	22.6 (19-27)	28 (25-30)
D	201.6 (188-211)	206 (200-212)	229.6 (194-271)	181 (172-188)
EST	present	present	present	present
HSPUR	absent	absent	absent	absent

continued.

Character	<i>C. nativo</i> (n= 19)	<i>C. abaetensis</i> (n= 37)	<i>C. littoralis</i> (n= 19)	<i>C. venetacaudus</i> sp nov. (n= 13)
SO	4 (4)	3.3 (3-4)	4 (4-4)	4 (4-4)
SC	5 (5)	6.2 (6-7)	6	6.2 (6-7)
TV	30.8 (29-32)	32 (30-35)	34.9 (32-38)	31.2 (30-32)
LV	8 (8)	8.7 (8-10)	8.6 (8-10)	10 (10)
FP	24 (22-26)	24 (27-31)	32.6 (28-36)	38 (34-45)
FFL	16 (14-17)	18 (16-21)	18.8 (16-24)	17.3 (16-18)
FTL	31 (26-33)	33 (29-38)	32.8 (29-37)	33 (30-35)
RH	2.7 (2-3)	1 (1)	1 (1)	1 (1)
SAM	95.5 (93-102)	140.4 (127-148)	109.9 (96-123)	119.5 (114-129)
SAT	26 (25-27)	32.6 (30-35)	28.7 (25-34)	31.7 (31-34)
D	196 (192-212)	221.8 (210-240)	174.9 (168-191)	204.8 (190-218)
EST	present	absent	absent	absent
HSPUR	-	present	present	present

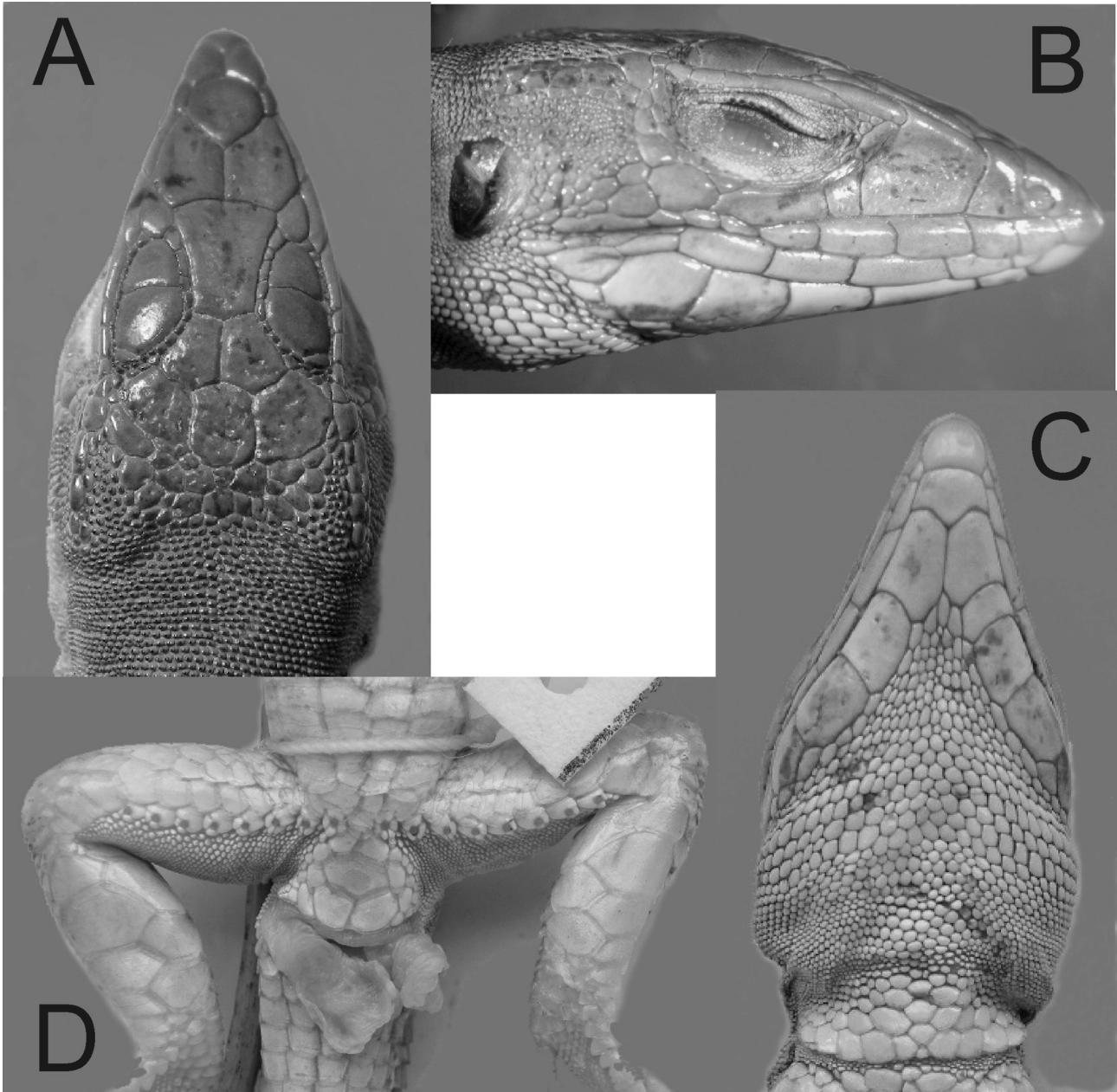


FIGURE 3. *Cnemidophorus confusionibus*, holotype, MZUSP 100203, adult male. A) dorsal view of the head; B) lateral view of head; C) ventral view of the head; D) preanal plate and femoral pores.

***Cnemidophorus venetacaudus* sp. nov.**

(Fig. 4, 5)

Holotype. MZUSP 100119 (field number MRT 4714), adult male from Ôlho D'Água da Santa (9 1310" S, 43 2927" W), Parque Nacional da Serra das Confusões, Caracol municipality, state of Piauí, Brazil, elevation 460 m, collected on 5 October 2000 by Hussam Zaher, Miguel Trefaut Rodrigues, and Felipe Curcio.

Paratypes. MZUSP 100115-100118 (field numbers, respectively MRT 4644, 4645, 4675, 4694), MZUSP 100120- 100127 (field 4726, 4754, 4898, 4916, 4946, 4974, 5009, 5011), collected by Hussam Zaher, Miguel Trefaut Rodrigues, and Felipe Curcio, from 4–13 October 2000, and MZUSP 100128 (field MRT 9196), collected by Hussam Zaher, Felipe Curcio, Pedro Nunes and Giovanna G. Montingelli on 22 January 2002; all with same locality data as for the holotype.



FIGURE 4. *Cnemidophorus venetacaudus*, Olho D'Água da Santa, Parque Nacional da Serra das Confusões, Piauí, Brazil. Photo: Miguel Rodrigues.

Diagnosis. A species of the ocellifer group with granules in the supraorbital semicircles, and no anal spurs in males. *Cnemidophorus venetacaudus* differs from all the other members of the ocellifer group by the absence of stripes in the dorsum and a high number of femoral pores. In addition, it differs from *C. ocellifer*, *C. nativo*, *C. mumbuca*, and *C. jalapensis* by having 34–45 ($x=38$) femoral pores (24–26, $x=24$ in *C. nativo*; a maximum of 20 in all other species); 10 longitudinal rows of ventral scales (6–8), 30–32 ($x=31.2$) transverse rows of ventrals (29–32, $x=30.8$ in *C. nativo*, a maximum of 29 in all other species), 31–34 ($x=31.7$) scales around tail (a maximum of 30 in all other species), 114–129 ($x=119.5$) scales around midbody (91–122, $x=104$ in *C. jalapensis*, a maximum of 117 in all other species), 6 superciliaries (5), 1–2 row of spurs in the heel in males (absent), interparietal narrower than other parietals (wider), humeral region with one row of distinctive enlarged scales (2–4 not so enlarged), and no enlarged scales in temporal region posterior to third subocular (present). *Cnemidophorus venetacaudus* differs from *C. abaetensis* by having 34–45 ($x=38$) femoral pores (27–31, $x=24$), 190–218 ($x=204.8$) dorsal scales (210–240, $x=221.8$), interparietal narrower than other parietals (wider), second supraocular totally separated from frontal by supraocular granules (second supraocular contacts frontal), four supraoculars (usually 3), dorsal stripe absent (present), stripe in the tail absent (present). *Cnemidophorus venetacaudus* differs from *C. littoralis* by having 34–45 ($x=38$) femoral pores (28–36, $x=32.6$ in *C. littoralis*), 190–218 ($x=204.8$) dorsal scales (168–191, $x=174.9$), interparietal narrower than other parietals (wider), frontonasal never divided (35.6 % of individuals with a divided frontonasal, according to Rocha *et al.*, 2000), second supraocular separated from frontal by supraocular granules (second supraocular contacts frontal), dorsal stripe absent (present), and stripe in the tail absent (present).

Description of Holotype. Measurements: snout-vent-length 83.66 mm; trunk length 40.75 mm; head length 19.8 mm; head width 11.24 mm; head height 9.95 mm; tail length 145.34 mm (regenerated); femur length 15.17 mm; tibia length 12.48 mm; foot length 27.89 mm; humerus length 5.92 mm, and arm length 26.41 mm.

Snout moderately pointed. Rostral large, wider than high, visible from above, separated from frontonasal by the contact between anterior nasals. Anterior and posterior nasals in broad contact at midline through an oblique suture. Nostril rounded in lower part of suture. Frontonasal roughly hexagonal, with almost rounded vertices, con-

tacting posterior nasals and prefrontals. Prefrontals roughly trapezoidal, pentagonal, in broad and straight contact along midline, contacting laterally nasal, loreal and first supraocular. Frontal approximately pentagonal, longer than wide, wider anteriorly, contacting only partially first supraocular and separated from the second and third supraoculars by a row of granules. Two frontoparietals, longer than wide, approximately pentagonal, separated from supraoculars by a row of granules. Five parietals, the interparietal narrow, longer than wide, sub-hexagonal, bordered at each side by much larger parietals. Smaller external parietals, slightly larger than interparietal and diagonally disposed. Occipital scales irregular and variable in size, larger than dorsals. Four supraoculars on each side, second and third largest, and first in contact with loreal, prefrontal, and first and second supraciliaries. Six supraciliaries on each side, third largest and sixth smallest, only first and second supraciliaries in contact with first supraocular, all others separated from supraoculars by a row of granules. Loreal single, large, in contact with posterior nasal, prefrontal, first supraocular, first supraciliary, preocular, first subocular, and third and fourth supralabials. Preocular narrow, higher than wide, in contact with first subocular, loreal, and first superciliary. Three suboculars on each side, anteriormost keeled, approximately pentagonal, in contact with fourth supralabial; second subocular keeled, longer than anterior, approximately rectangular, in contact with fourth, fifth and sixth supralabials; third subocular smooth, slightly shorter than second one, approximately rectangular. A continuous keel runs from preocular to second subocular. Six supralabials on each side. Temporal region with irregular scales, granular centrally, sub-equal, enlarging in size towards eye and ear opening. A supratemporal row with moderately large scales, decreasing in size posteriad. Ear opening large, semicircular, higher than wide. All dorsal and lateral head scales juxtaposed, smooth, except for keeled preoculars and suboculars. Symphyseal wider than long, concave anteriorly, convex posteriorly, ellipsoid, contacting posteriorly first infralabials and postsymphyseal, forming two wide angles. Postsymphyseal single, pentagonal, as long as wide, in contact with first and second infralabials; followed by five pairs of enlarged chinshields. First pair of chinshields the longest, in broad contact along midline, in contact with third infralabials; second, third and fourth pairs separated from infralabials by row of small granules and internally marginated by a series of enlarged scales. Five infralabials on each side, followed posteriorly by series of small scales extending to labial commissure; first infralabials are the smallest. Chin scales irregular in size and shape, diagonally disposed, increasing in size posteriorly. Gular region divided in two areas: anterior one with irregularly shaped, roughly elongate, juxtaposed scales, disposed in roughly oblique and transverse rows from first pair of chinshields, to an imaginary line uniting the lower margin of ear openings; lateral scales largest. Posterior gular region with diminute granules disposed in transverse rows, identical to those on antegular fold. Gular and antegular folds with diminute granules; a series of enlarged mesoptychial scales between the two folds. Scales on nape and sides of neck similar to dorsals. Dorsal and flank scales granular, rounded, smooth, sub-imbricate; 213 scales along a middorsal line from nape to base of tail; 119 scales around midbody (excluding ventrals), 34 scales around tail. Ventrals large, smooth, wider than long, rectangular, imbricate, in 32 transverse rows; 10 transverse rows of ventral scales across midbody. Ventral scales separated from scales on flanks by a row of moderately enlarged scales. Preanal plate with four enlarged scales, the central one largest, contacting one anterior, surrounded laterally by small scales, and two posterior ones that form the lower border of the anal plate. Preanal spurs absent. Thirty eight total femoral pores in a continuous row with a short gap medially; 18 on right side, 20 on left. Scales on base of tail rectangular, smaller than ventrals, in transverse rows; keeled dorsal and laterally, ventrally smooth. Tail scales becoming gradually longer and narrower from the base to tip; subcaudal scales becoming keeled distally, but less markedly than in dorsals. Limbs with large, smooth, imbricate scales on dorsal aspect of upper arms, antero-dorsal aspect of forearms, antero-ventral aspect of thighs, and ventral aspect of lower legs; elsewhere scales small, granular. Larger scales on upper arms, disposed in longitudinal rows. Forearms with one row of distinctively enlarged scales, wide than long. Dorsal face of arm with one row of enlarged scales. Anterior scales on thigh decreasing in size proximally, with five rows of enlarged scales. Lower legs with two rows of enlarged, hexagonal scales. Ventral aspect of hands and feet granular; one enlarged tubercle at base of pollex. Sub-digital lamellae single; 18 on left and right fourth fingers; 34 on left fourth toe and 35 on right one. Heel with one row of spurs.

Color in preservative. Dorsum, and dorsal parts of limbs light brown. A diffuse wide dark-brown, dorsolateral band extends from nostril to groin, marginated inferiorly by a wider light gray band on the lower flanks. Belly, and ventral region of tail bluish white. Head color follows dorsal and lateral body patterns: light brown dorsally and light gray laterally, separated by the dark lateral stripe. Ventral aspect of head bluish white. Ventral aspect of fore and hind limbs brownish white. Dorsal and lateral aspects of tail blue.

Color in life. Dorsal surface of head, body, and limbs light brown. A dark-brown dorsolateral band runs from nostril, across the eye, and reach the groin area. Below it, a light gray area covers all the lateral surface of the head and flanks. Ventral aspect of head bluish white. Paravertebral and lateral stripes absent. Belly and ventral region of tail bluish white. Ventral aspect of fore and hind limbs brownish white. Dorsal aspect of tail bright blue, lateral aspect predominantly bluish green (Fig. 4).

Variation. Based on 12 paratypes.

Head larger (15.41–19.8 mm; $x = 16.94$ mm), than wide (9.09–11.24 mm; $x = 10.01$ mm). Head height 7.57–9.95 mm ($x = 8.57$ mm). Snout-vent length 63.5–83.66 mm ($x = 70.97$ mm). Tail length 132.32–145.34 mm, ($x = 138.83$ mm), 2.1 times longer than SVL. Arm length 5.75–6.5 mm, ($x = 6.11$ mm). Fore limb length 21.76–26.41 mm, ($x = 23.91$ mm). Tibia length 10.45–12.48 mm, ($x = 11.58$ mm). Thigh length 12.15–15.17 mm, ($x = 13.26$). Foot length 21.8–27.9 mm, ($x = 24.0$ mm). Hind limb, 1.88 time longer than foot. Hind limbs length 39.66–55.54 mm, ($x = 48.72$ mm).

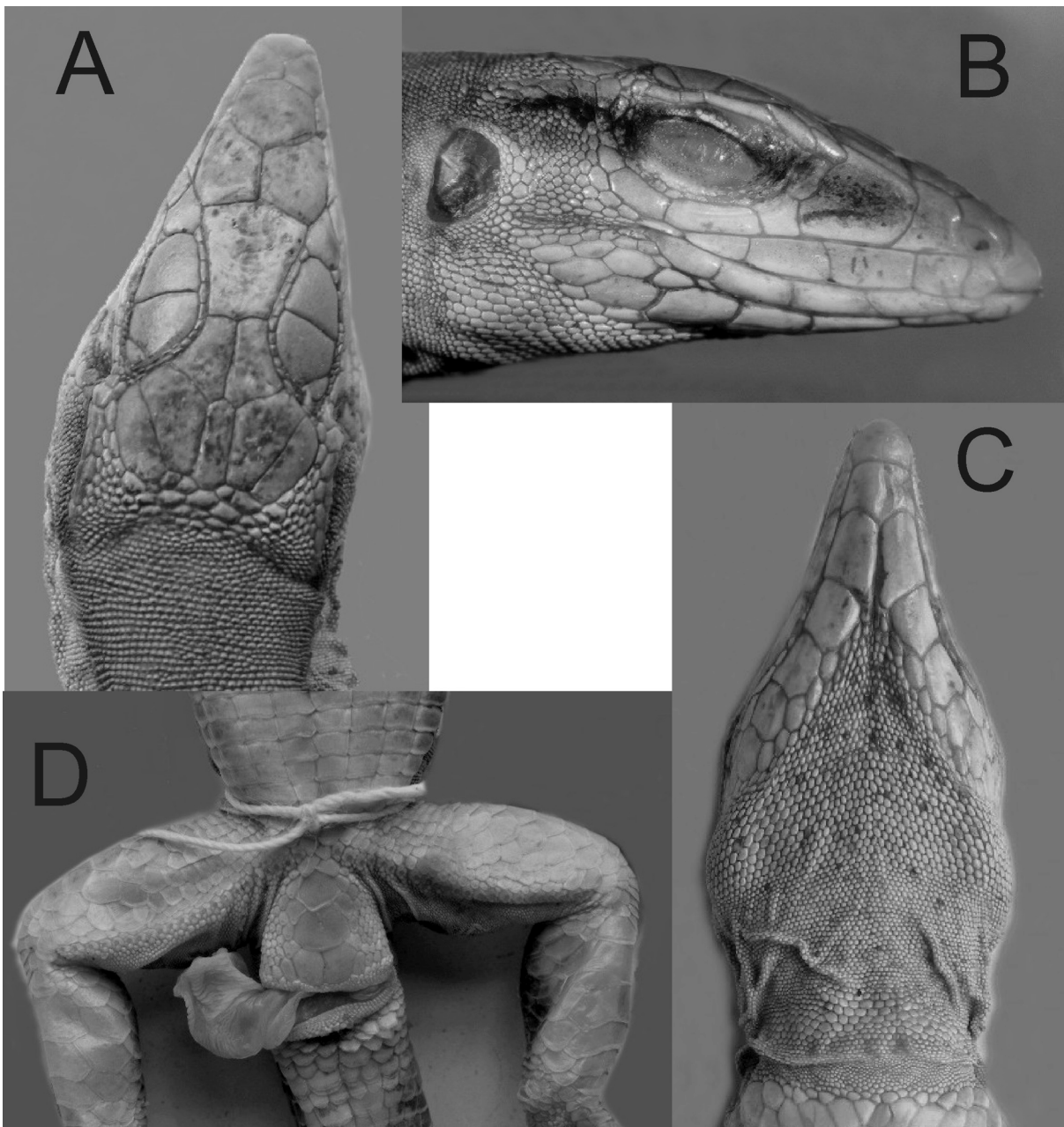


FIGURE 5. *Cnemidophorus venetacaudus*, holotype, MZUSP 100119, adult male. A) dorsal view of the head; B) lateral view of head; C) ventral view of the head; D) preanal plate and femoral pores.



FIGURE 6. Habitat of *Cnemidophorus confusionibus* at Morrinhos in the Serra Geral, Parque Nacional da Serra das Confusões, Piauí, Brazil.

There is no sexual dichromatism in adult pattern. Males have spurs in heel. MZUSP 100121 has seven superciliars. Variation in other meristic characters is summarized in Table 1.

Etymology. The specific epithet, *veneta*, is a Latin adjective meaning “bluish,” and the Latin superlative suffix *caudus*, meaning “tail.” The name “bluish tail” is an allusion to the characteristic blue coloration of the tail of this species.

Natural history and distribution. The Parque Nacional da Serra das Confusões (PNSC) is located in the southeastern part of the state of Piauí (08°32′–09°16′S, 43°15′–43°51′W) and was created in 1998 to protect an area of 5024 km², between the towns of Caracol, Guaribas, Cristino Castro, and Tamboril do Piauí (Fig. 1). All the area of the National Park is enclosed within the drainage of the Rio Parnaíba, with altitudes ranging from 450 to approximately 700 m (Rodrigues *et al.*, 2001; Bour and Zaher, 2005). Most of the area of the park corresponds to an extensive arenitic plateau, the “Chapada dos Gerais” (locally known as “Serra Grande”), dissected by intermittent drainages (Rodrigues *et al.*, 2001; Bour and Zaher, 2005). The borders of the plateau are deeply dissected and characterized by ruiniform rocky outcrops with sandy soils originated from the erosion of Serra Geral, especially on lower areas. The climate is tropical semi-arid and most of the region is covered by xeromorphic and thorny plants with deciduous leaves. As usual in the Caatinga, cactuses are especially abundant. Although most of the area is dominated by the Caatinga, some scattered Cerrado-like trees with a leathery bark trees occur near crevices in the plateau borders, especially near sandy soils among the rock outcrops. Further information on the area can be obtained in Rodrigues *et al.* (2001) and Bour and Zaher (2005). We collected at Toca da Cabocla, Canto Verde, and Morrinhos on the Serra Grande plateau; all covered by a highly dense Caatinga vegetation dominated by Leguminosae and Euphorbiaceae with trees reaching up to 6–7 meters high (Fig. 6 and 7). We also sampled at the Ôlho D’Água da Santa, in the lowland areas with sandy soils near the plateau border and at Lagoa do Jacú, a lowland area covered by an evergreen Caatinga vegetation.

Cnemidophorus venetacaudus was collected only at Olho D’Água da Santa in an area characterized by sandy soils with arenitic outcrops near the plateau border (Fig. 8). In this area it was observed syntopically with *C. confu-*

sionibus which is widely distributed in the PNSC. Specimens emerged from their nocturnal refuges in sunny days, around 9am, and remained active until the end of the day. They usually took refuge under rocks, fallen trunks, piles of debris, or small holes in the ground. Most specimens were observed when foraging among tufts of Caatinga vegetation in white sandy soils at the hottest part of the day. Eventually they were spotted crossing rocky areas. *Cnemidophorus confusionibus* is much more abundant than its congener in the area.



FIGURE 7. General aspect of a dense and thorny Caatinga, habitat of *Cnemidophorus confusionibus*, near Canto Verde, Parque Nacional da Serra das Confusões, Piauí, Brazil.



FIGURE 8. Habitat of *Cnemidophorus venetacaudus* and *Cnemidophorus confusionibus* at Ôlho D'Água da Santa, Parque Nacional da Serra das Confusões, Piauí, Brazil. Both species occur syntopically at sandy areas among rock outcrops.

Other species obtained in the region were: the tropidurids *Stenocercus squarosus*, *Tropidurus oreadicus*, and *Tropidurus semitaeniatus*, the leiosaurid *Enyalius bibroni*, the hoplocercid *Hoplocercus spinosus*, the gymnophthalmids *Calyptommatus confusionibus*, *Colobosaura mentalis*, *Micrablepharus maximiliani*, and *Procellosaurinus erythrocerus*, the teiids *Ameiva ameiva*, and *Tupinambis merianae*, the skink *Mabuya heathi*, the phyllodactylid *Phyllopezus pollicaris*, and the gekkonid *Hemidactylus brasiliensis*. Up to now, *Cnemidophorus confusionibus* is known only from PNSC. We have seen no specimens of *C. venetacaudus* other than the type series but one of us (MTR) has a copy of a picture taken in 1989 by Ivan Sazima after a specimen obtained at Boqueirão Grande, municipality of Recanto do Buriti, Piauí, about 120 km NE from the type locality.

Discussion

Species of *Cnemidophorus* that retain supraorbital semicircles surrounded by granules and lack preanal spurs are presently included in the ocellifer group (Rocha *et al.*, 1997, Rocha *et al.*, 2000, Dias *et al.*, 2002, Colli *et al.*, 2003a, Colli *et al.*, 2003b). This is the case of *Cnemidophorus confusionibus* and *C. venetacaudus* that fit squarely in this scheme. However, differences between the two new species and their distinct morphological affinities within the ocellifer group (Table 1) provide the basis for further subdividing this species assemblage in two phenetically distinctive subgroups. The first subgroup includes *C. confusionibus*, *C. mumbuca*, *C. jalapensis*, and *C. ocellifer*, which share the following combination of characters: 1) enlarged scales in temporal region, posterior to third subocular (Fig. 9A); 2) five supraciliars; 3) 6–8 longitudinal rows of ventral scales; 4) 24–29 transverse rows of ventral scales; 5) 11–21 femoral pores. The second subgroup includes *C. venetacaudus*, *C. littoralis*, and *C. abaetensis*, which share the following features: 1) enlarged scales in temporal region, posterior to third subocular absent; 2) 6–7 supraciliars, the first divided (Fig. 9B); 3) 8–10 longitudinal rows of ventral scales; 4) 29–38 transverse rows of ventral scales; 5) 21–45 femoral pores; 6) one distinctive row of enlarged scales in the dorsal part of arm (Fig. 10A); 7) spurs in heel of the males (Fig. 10B); 8) a bluish green tail.

Cnemidophorus nativo, previously attributed to the ocellifer group, does not exhibit the diagnostic characters of the group and thus cannot be allocated in neither subgroups defined above. Actually it shows an intermediate condition in the number of femoral pores, temporal and ventral scales (see Table 1) that might be considered as evidence supporting Dias *et al.*'s (2002) hybridization hypothesis. Indeed, according to these authors (Dias *et al.*, 2002), “*C. nativo* is a clonal species originating from a hybrid between *C. ocellifer* and one of the two green-tailed sand-dwelling species (with *C. abaetensis* being the strongest contender, in our opinion, judging by its meristic characters and geographic distribution).”

On the other hand, we consider that *Cnemidophorus parecis* does not belong to the ocellifer group. The granules of the supraorbital semicircles are incomplete and for this reason the third supraocular contacts the frontoparietal, a character absent in all species of the ocellifer group. Furthermore, the tongue of *C. parecis* is rounded posteriorly, and covered by the lingual sheath, a character known for the genus *Ameiva* (Presch, 1971). This conclusion is supported by the molecular-based phylogeny of Giugliano *et al.* (2006) in which *C. parecis* appears as more closely related to *Ameiva ameiva* than to any other species of *Cnemidophorus*.

Additionally, Colli *et al.*'s (2009) discriminant analysis based on meristic variables of five species of *Cnemidophorus* from southern Amazonia also supports the arrangement proposed herein, since it recovers three groups: the first one is formed by *C. ocellifer*, *C. mumbuca*, and *C. jalapensis*, while the second and the third groups include *C. littoralis* and *C. parecis*, respectively.

Cnemidophorus ocellifer is considered the species with the largest distribution in the genus, being reported as occurring over a wide range of habitats, including the savanic Cerrado (Vitt, 1991; Araújo, 1994), the semiarid Caatinga (Vanzolini, 1974, Vanzolini *et al.*, 1980, Vitt, 1983, 1995), the coastal “restingas” (Araújo, 1991; Rocha and Bergallo, 1997, Rocha *et al.*, 2000), and the Gran Chaco of Paraguay and Argentina (Ceï, 1993, Williams and Tedesco, 1985). Along this extensive area of distribution, populations show important morphological variation, not only in color pattern, but also in lepidosis and morphometry. Rodrigues (1987: 208, 2001) mentions the occurrence of several undescribed species of the ocellifer group, one of which occurring in Morro do Chapeú and Santo Inácio, state of Bahia. Vanzolini *et al.* (1980) report on specimens of *C. ocellifer* from Junco do Seridó, state of Paraíba, and mention ontogenetic variation in male color pattern. Williams and Tedesco (1985) report the occurrence of *C. ocellifer* in the province of Corrientes, Argentina, which shows variation in color pattern and lepidosis in respect to

the population of *C. ocellifer* from Santiago del Estero. These observations indicate that, despite efforts in the last years to clean up the taxonomy of this species complex, there are still undescribed species in Brazil, Paraguay and Argentina identified informally as *C. ocellifer* (Rodrigues, 1987).

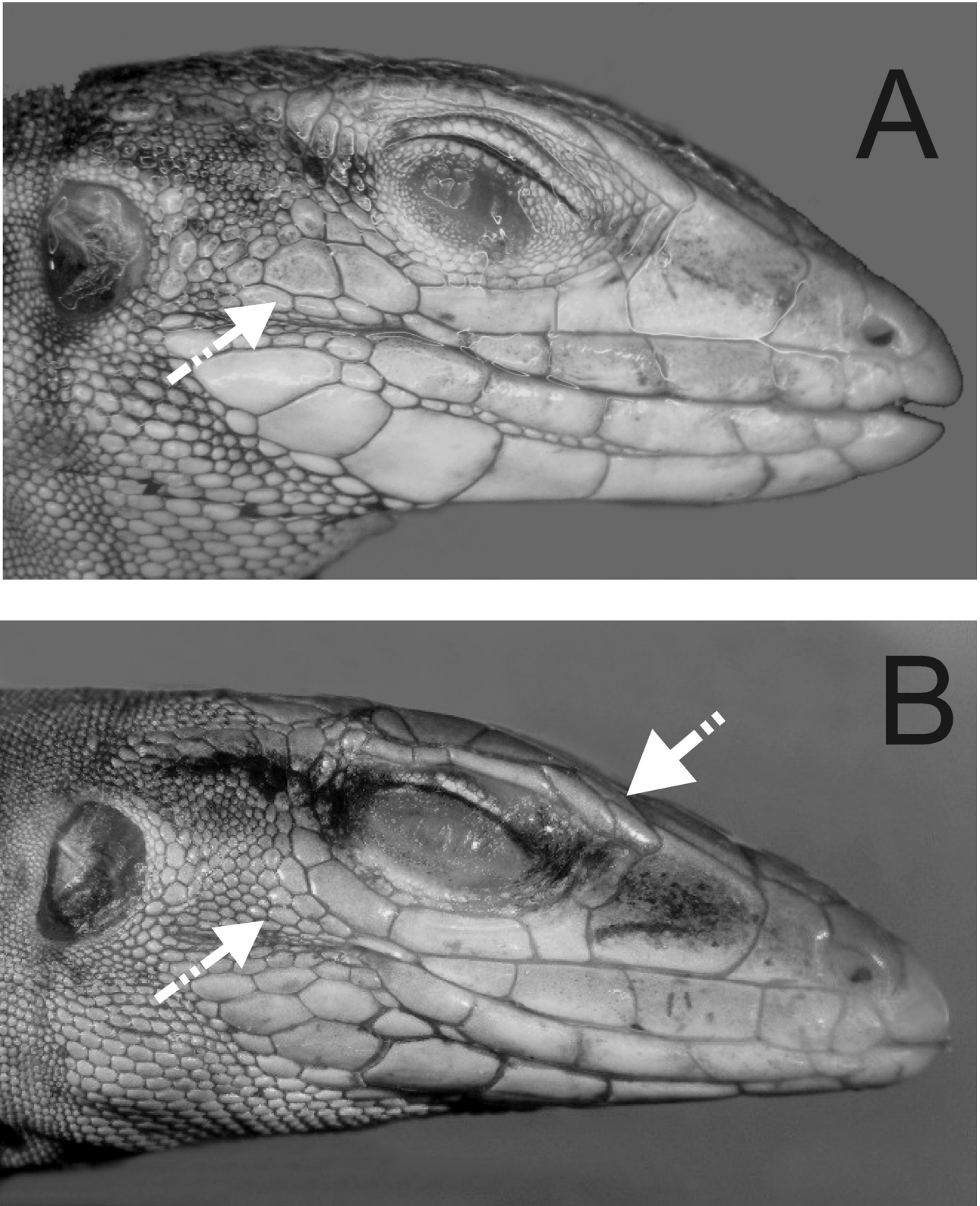


FIGURE 9. Lateral view of head. A) *Cnemidophorus ocellifer*, MZUSP 26831; B) *C. venetacaudus*, holotype. The arrows show the following characters: number of supraciliars and enlarged scales in the temporal region.

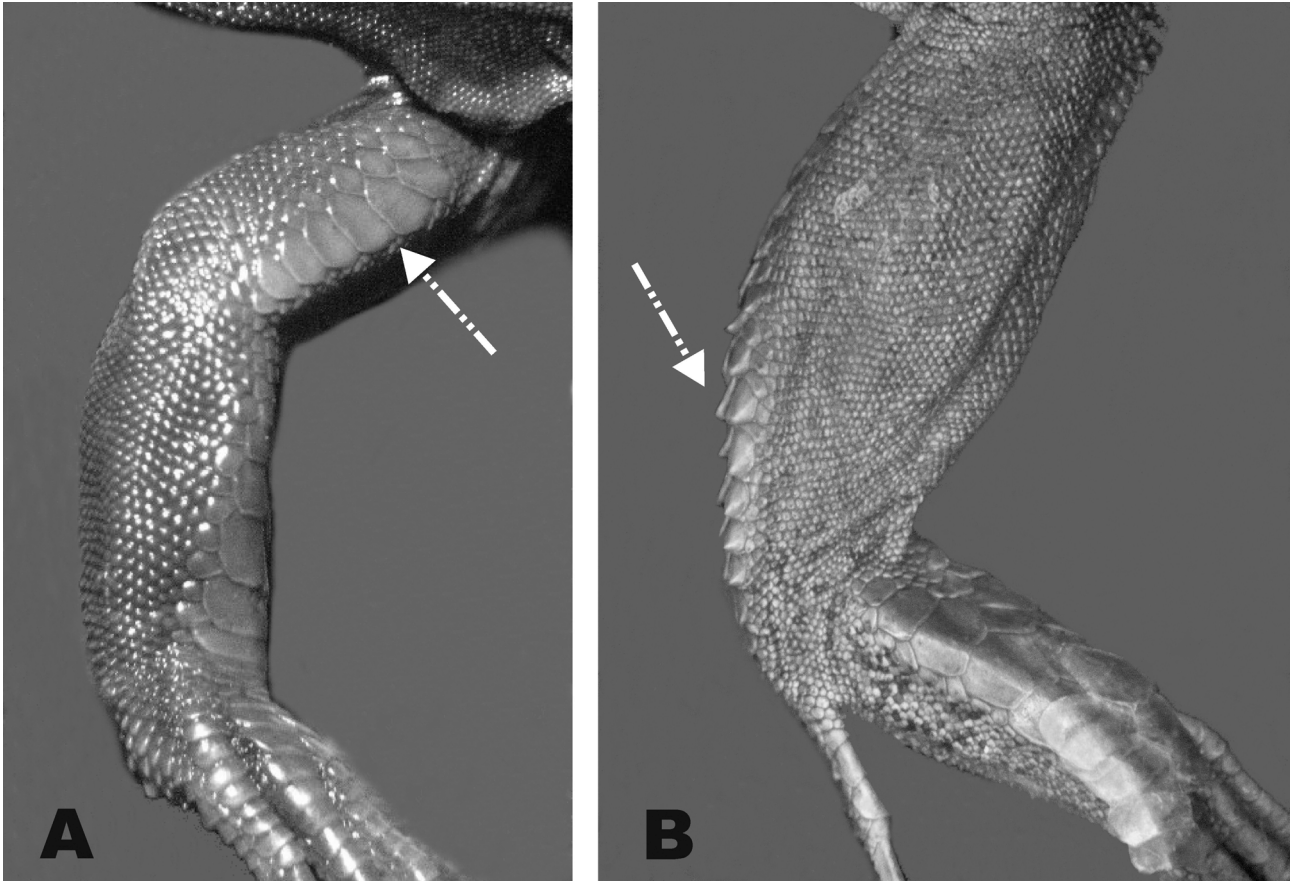


FIGURE 10. *Cnemidophorus venetacaudus*, holotype. A) fore limb, the arrows show the row of enlarged scales. B) hind limb, the arrow show the row of spurs in the heel in the male.

Material examined

Species names are arranged alphabetically by species, then, by country, province, museum acronym, number and details of the localities.

Cnemidophorus abaetensis: **Brazil, Sergipe**: MZUSP 79610, 80982-80983, Barra dos Coqueiros. MZUSP 88104, 88106, 88108, Estação Ecológica Serra de Itabaiana. MZUSP 49385-49387, Santo Amaro das Brotas. **Bahia**: MZUSP 56559-56567, Guarajuba. MZUSP 96847- 50, Jandaíra. MNRJ 8618, 8623, 8631, 8640, 8642, 8644, 8645, 8647, 8650, 8658, 8687, 8681, 8685, 9300-9301, Salvador (parátipos).

Cnemidophorus confusionibus **sp nov**: **Brazil, Piauí**: MZUSP 100187-1000205. Parque Nacional Serra das Confusões, Caracol.

Cnemidophorus jalapensis: **Brazil, Tocantins**: MZUSP 100168 and 100169, São Félix do Jalapão.

Cnemidophorus littoralis: **Brazil, Rio de Janeiro**: MNRJ 6555-6556, 6559-6560, 6564-6566, 6578-6579, 6585, 6587, 6592, 6599, 6601, 6603-6604, 6607, 6621, 6665, Barra de Maricá (paratypes).

Cnemidophorus mumbuca: **Brazil, Tocantins**: MZUSP 92547-92548, Mateiros (paratypes). MZUSP 94102-94109, 93415, Mateiros (Estação Ecológica Serra Geral do Tocantins)

Cnemidophorus nativo: **Brazil, Espírito Santo**: MNRJ 39545, 4713, 4715, 4718-4719, 4722, 4724-4725, 4730, 4732, 4734-4738, Linhares (paratypes). MZUSP 95100-95101, Conceição da Barra. **Bahía**: MZUSP 96833-96834, Itacaré.

Cnemidophorus ocellifer: **Brazil, Bahia**: MZUSP 191-196, 201-206, 6149-6152, 6700, 8468, 26827-26859, 65762, Salvador.

Cnemidophorus parecis: **Brazil, Rondônia**: MZUSP 64470-64473 BR 364 KM 53-55; MZUSP 92549-92550, Fazenda Cachoeira (12°32'S, 60°25'W) (paratypes).

Cnemidophorus venetacaudus sp nov: Brazil, Piauí: MZUSP 100115-100119, 100120-100127. Parque Nacional Serra das Confusões. Caracol.

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