



A new species of the bromeligenous *Scinax perpusillus* group (Anura; Hylidae) from Serra do Brigadeiro, State of Minas Gerais, Southeastern Brazil

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Abstract

A new species of the bromeligenous *Scinax perpusillus* group is described from Serra do Brigadeiro, state of Minas Gerais, southeastern Brazil (20°43'13.5''S; 42°28'48.7''W). *Scinax cosenzai* **sp. nov.** is diagnosed by a combination of traits: moderate-size within the group (17.29–20.97 mm in males and 22.65–24.02 mm in females); head longer than wide; snout protruding in lateral view and slightly acuminate in dorsal view; prominent medial process between the nostrils; few tubercles scattered throughout the dorsal surface, including the head; ventral skin granulated, more intensively near the cloacal region; dorsum different tones of gray with dark bands; transversal dark bars along limbs; gular region with irregular dark pigmentation; in life, hidden portion of the thigh and tibia region with some irregular bright yellow colored patches; and a distinct advertisement call with 2–14 notes/call, call duration 177.62–2066.75 ms, 1–33 pulses/note and dominant frequency of 3375.91–4571.21 Hz. Additionally, notes on natural history are provided.

Key words: Amphibia, PESB, *Scinax cosenzai* **sp. nov.**, vocalization

Introduction

The genus *Scinax* Wagler is currently composed of 102 species of treefrogs (Frost 2011), ranging from southern Mexico to east-central Argentina (Faivovich 2002). The genus is divided into two large clades: the *S. ruber* and the *S. catharinae* clades (Faivovich 2002). The *S. ruber* clade contains the *S. rostratus* group, *S. uruguayus* group and a large number of species currently unassigned to any group. The *S. catharinae* clade contains the *S. catharinae* and the *S. perpusillus* groups (Faivovich 2002; Faivovich *et al.* 2005).

Peixoto (1987) proposed the *Scinax perpusillus* group, which is composed of small species that breed exclusively in bromeliads. A study of the phylogenetic relationships of *Scinax* presented by Faivovich (2002) did not adequately test the monophyly of the *Scinax perpusillus* group, because only one species of the group was available for his analysis. A monophyletic *S. perpusillus* group was also suggested by Pombal and Bastos (2003) based on vocalization data and by Alves-Silva and Silva (2009) supported by reproductive behavior characters.

Twelve species are currently recognized in the *S. perpusillus* group: *Scinax alcatraz* (Lutz); *S. arduous* Peixoto; *S. atratus* (Peixoto); *S. belloni* Faivovich, Gasparini and Haddad; *S. faivovichii* Brasileiro, Oyamaguchi and Haddad; *S. insperatus* Silva and Alves-Silva; *S. littoreus* (Peixoto); *S. melloi* (Peixoto); *S. peixotoi* Brasileiro, Haddad, Sawaya and Martins; *S. perpusillus* (Lutz & Lutz); *S. tupinamba* Silva and Alves-Silva; and *S. v-signatus* (Lutz). These species are distributed in the Atlantic tropical coastal forest, from the states of Espírito Santo to Santa Catarina, Brazil (Brasileiro *et al.* 2007b, Silva & Alves-Silva 2008; Faivovich *et al.* 2010).

Feio *et al.* 2008 and Lacerda *et al.* 2009 recognized a distinct species belonging to the *S. perpusillus* group in Parque Estadual da Serra do Brigadeiro, State of Minas Gerais, southeastern Brazil. Herein, we describe this new species, which is ecologically and morphologically most similar to *S. arduous* and *S. v-signatus*. In addition, description of the advertisement call and notes on natural history are provided.

Material and methods

Information on other species was taken from preserved specimens (Appendix 1) deposited in natural history collections and complemented with literature data from Peixoto (1986, 1987, 1988a, 1988b, 2002), Brasileiro *et al.* (2007a, 2007b), Silva and Alves-Silva (2008, 2011), and Faivovich *et al.* (2010). Specimens examined for comparisons are deposited in the following collections: EI (Eugênio Izecksohn collection, Departamento de Biologia Animal, Universidade Federal Rural do Rio de Janeiro, Seropédica, RJ, Brazil), MBML (Museu de Biologia Mello Leitão, Santa Teresa, ES, Brazil), MNRJ (Museu Nacional, Rio de Janeiro, RJ, Brazil), MZUFV (Museu de Zoologia João Moojen, Departamento de Biologia Animal, Universidade Federal de Viçosa, MG, Brazil) and CHUFRRJ (Coleção Herpetológica da Universidade Federal Rural do Rio de Janeiro).

Using digital calipers, we took the following measurements to the nearest 0.01 mm from 30 male and seven female specimens: snout-vent length (SVL), head length (HEL), head width (HW), thigh length (THL), tibia length (TBL), foot length (FL), and hand length (HL). Using a stereomicroscope with a micrometric ocular we measured: eye diameter (ED), tympanum diameter (TD), interorbital distance (IOD), eye-nostril distance (END), and inter-nostril distance (IND). Morphological terminology and description of the snout shape follow Cei (1980). Webbing formula follows Savage and Heyer (1967) as modified by Myers and Duellman (1982). All specimens collected were euthanized, fixed in 10% formalin, and transferred to 70% ethanol.

Vocalizations were recorded from the new species type locality with a Sony ICD P620 recorder with an internal microphone set at 16000 Hz and 16 bits resolution, on 20 August 2009, 19:00–21:00 h, at ca. 20°C air temperature. The call oscillogram, spectrogram and amplitude spectrum were analyzed using Sound Ruler 0.9.6.0 with FFT of 256 points, 0.9 overlap and hanning window type.

Results

Scinax cosenzai sp. nov.

(Figs 1, 2, 3)

Holotype. MNRJ 75462, adult male, collected at Lage das Bromélias, Serra do Brigadeiro (20°43'13.5''S and 42°28'48.7''W; 1385 m above sea level), Municipality of Araponga, state of Minas Gerais, Brazil. Collected by J.V.A. Lacerda, B. Assis and J.S. Dayrell on October 28, 2007.

Paratopotypes. MZUFV 3895, adult male collected by Feio, R.N. and Santos-Filho, J.B., on 03 September 1999; MZUFV 6653, adult male collected by R.N. Feio, E.F. Oliveira and J.S. Dayrell, on 05 December 2005; MZUFV 8275, adult male collected by J.V.A. Lacerda and B. Assis, on 29 January 2008; MNRJ 75463–64, adult males collected by Feio, R.N. and Santos-Filho, J.B., on 03 September 1999; MNRJ 75465, adult male collected by R.N. Feio, E.F. Oliveira, H.C. Costa and L.L. Moraes, on 22 September 2005; MNRJ 75466, adult male collected by C.S. Cassini and R.N. Feio, on 21 February 2006.

Referred specimens. *Scinax cosenzai* sp. nov.: BRAZIL: State of Minas Gerais: Municipality of Araponga (topotypes): MZUFV 4956, 6654, 7682, 7779, 8029, 8092, 8093, 8567, 8568, 11458–11463, 11470–11473); Municipality of Ervália: Distrito do Careço (20°51'9.24'' S and 42°31'5.56'' W; 980 m above sea level): MZUFV 11532–11537, 11541–11543.

Diagnosis. *Scinax cosenzai* sp. nov. belongs to the *S. perpusillus* group based on the use of bromeliads for reproduction and reduced webbing between toes II and III. The new species is characterized by: (1) moderate-size within the group (males 17.54–20.97 mm SVL, females 22.65–24.02 mm SVL); (2) snout protruding in lateral view and slightly acuminate in dorsal view; (3) snout with a distinct medial process, defined by Silva and Alves-Silva (2008) as a protuberance caused by the cartilaginous medial prenasal process of the nasal tectum under the skin; (4) medium-sized, elliptical choanae; (5) vomerine teeth in two arc shape series between choanae; (6) head longer than wide; (7) protruding eye; (8) canthus rostralis distinct; (9) loreal region concave; (10) tympanum round and pigmented, with diameter less than half the diameter of the eye; (11) thigh plus tibia length shorter than SVL; (12) webbing lacking between toes I and II and vestigial between II and III; (13) few tubercles scattered throughout the dorsal surface, including the head; (14) ventral skin granulated, more intensively near the cloacal region; (15) dorsum different tones of gray with transversal dark bars originating on each inguinal region and converging on the

third portion of the dorsum in an inverted V-shaped figure; (16) lateral dark stripe, from the region of the eye to the anterior margin of the inguinal region; (17) head with an interocular dark transversal bar; (18) transversal dark bars along the anterior and posterior members; (19) discreet nuptial glandular pads on the base of thumb; (20) gular region with irregular dark pigmentation; (21) in life, hidden portion of the thigh and tibia region with some irregular bright yellow colored patches (Fig. 3); (22) a distinct vocalization with heterogeneous multipulsed notes (2–14 notes/call, call duration 177.62–2066.75 ms, 1–33 pulses/note and dominant frequency of 3375.91–4571.21 Hz).

Advertisement call. We analyzed a total of 45 calls recorded at the type locality belonging to three call series emitted by three individuals that were not collected. We were unable to observe direct interaction of these males with other males and females during the recordings. The duration of the call series was 34.4, 55.1 and 68.9 s, with 11, 16 and 18 calls/call series, call rate of 0.25, 0.29 and 0.32 calls/sec and interval between calls of 2.78 s (1.9–4.32; SD=0.64; n=42 intervals). Calls are constituted by 2–14 multipulsed notes with duration of 177.62–2066.75 ms and dominant frequency of 3375.91–4571.21 Hz (Table 1). Note duration of 36.15 ms (1.81–111.56; SD=23.94; n=236 notes), 10.53 pulses/note (1–33; SD=7.08; n=236 notes) and rate of 315.12 pulses/second (58.60–571.42; SD=103.08; n=236 notes). Notes are heterogeneous in duration, number of pulses and amplitude. Figure 4 shows the sonogram of the call series with 11 calls emitted by a single male and sonograms and spectrograms of each of these calls.

Comparison with other species. Adult individuals of *Scinax cosenzai* **sp. nov.** may be distinguished from other species of the *Scinax perpusillus* group by a combination of traits. The new species differs from *S. alcatraz* by its smaller size (SVL 19.7–24.4 mm in males and 27.0–29.8 mm in females of *S. alcatraz*; Brasileiro *et al.* 2007a) and by lacking inguinal glands (easily visible in *S. alcatraz*; Faivovich *et al.* 2010). *Scinax cosenzai* **sp. nov.** can be distinguished from *S. arduous* by its smaller size [19.3–22.7 mm ($\bar{x}$ =21.0; SD=0.8; n=20) in males of *S. arduous*], slender body, less protruding eyes, more evident canthus rostralis, loreal region more concave, THL + TBL shorter than SVL (longer in *S. arduous*) and a distinct advertisement call. It differs from *S. atratus* by the larger size of the female (maximum SVL of females of *S. atratus* 20.0 mm; Peixoto 1988b) and by its dorsal color pattern typical of the *S. perpusillus* group (melanic in *S. atratus*; Peixoto 1988b). The new species is promptly distinguished from *S. belloni* by not possessing dorsum of body and limbs densely covered by prominent granules, having trace of markings on dorsum, inguinal region and hidden surfaces of hind limbs, lacking inguinal glands and by the smaller size (19.8–23.0 mm SVL in males and 26.3–29.2 in females of *S. belloni*; Faivovich *et al.* 2010). It differs from *S. faivovich* by its larger SVL (SVL 16.2–18.0 mm in 23 males of *S. faivovich* and 18.6–21.7 mm in six females; Brasileiro *et al.* 2007b), furthermore *S. faivovich* has brown undersurface of tarsus and foot (not brown in the other species of the *S. perpusillus* group; Brasileiro *et al.* 2007b). *Scinax cosenzai* **sp. nov.** is promptly distinguishable from *S. insperatus* by the presence of a yellow flash color on inguinal region and hidden surfaces of thigh and tibia (absence of yellow markings in the inguinal region and hidden surfaces of limbs in *S. insperatus*; Silva & Alves-Silva 2011) and by its smaller SVL (18.5–21.9 mm in males of *S. insperatus*; Silva & Alves-Silva 2011). The new species differs from *S. littoreus* by lacking inguinal glands (easily visible in *S. littoreus*; Faivovich *et al.* 2010), by the less pronounced eyes, dorsal color pattern, snout profile and width of the head (dorsum brownish colored, rounded snout profile and wider head in *S. littoreus*). It differs from *S. melloi* by its larger size (maximum SVL in males of *S. melloi* 17.00 mm and 18.7 mm in females; Peixoto 1988b) and by its dorsal color pattern typical of the *S. perpusillus* group (marble dorsal pattern in *S. melloi*; Peixoto 1988b). *Scinax cosenzai* **sp. nov.** can be distinguished from *S. peixotoi* by having tibia larger than thigh (tibia same size as thigh in *S. peixotoi*; Brasileiro *et al.* 2007a), slender body and by the distinct advertisement call. It differs from *S. perpusillus* by its slender body, less pronounced eyes, snout more acuminate and a distinct advertisement call. The new species is distinguishable from *S. tupinamba* by the larger size [SVL of 17.8 mm in *S. tupinamba* (16.1–19.2; SD=0.9; n=21); Silva & Alves-Silva 2008], loreal region less concave and by the absence of a yellow stripe on the head of the tadpoles of the new species (the tadpole of *S. tupinamba* has a distinct, large, and bright yellow stripe between the eyes and the nostrils; Silva & Alves-Silva 2008). *Scinax cosenzai* **sp. nov.** differs from *S. v-signatus* by its smaller SVL [21.4–23.5 mm ($\bar{x}$ =22.4; SD=0.7; n=20) in males of *S. v-signatus*], less rugose dorsal skin texture, canthus rostralis less evident, loreal region less concave and with less tubercles. Besides, *S. v-signatus* has a dark pigmentation on the gular region organized in the form of a Y or V (Lutz 1973; Peixoto 2002), and has a distinctive orange-flash color on the foot, lower leg, thigh, inguinal region, and armpit (H. R. da Silva, pers. com.). *Scinax cosenzai* **sp. nov.** has irregular dark pigmentation on the gular region and presents a yellow-flash color only on inguinal region and hidden surfaces of thigh and tibia, lacking on armpits and foot.

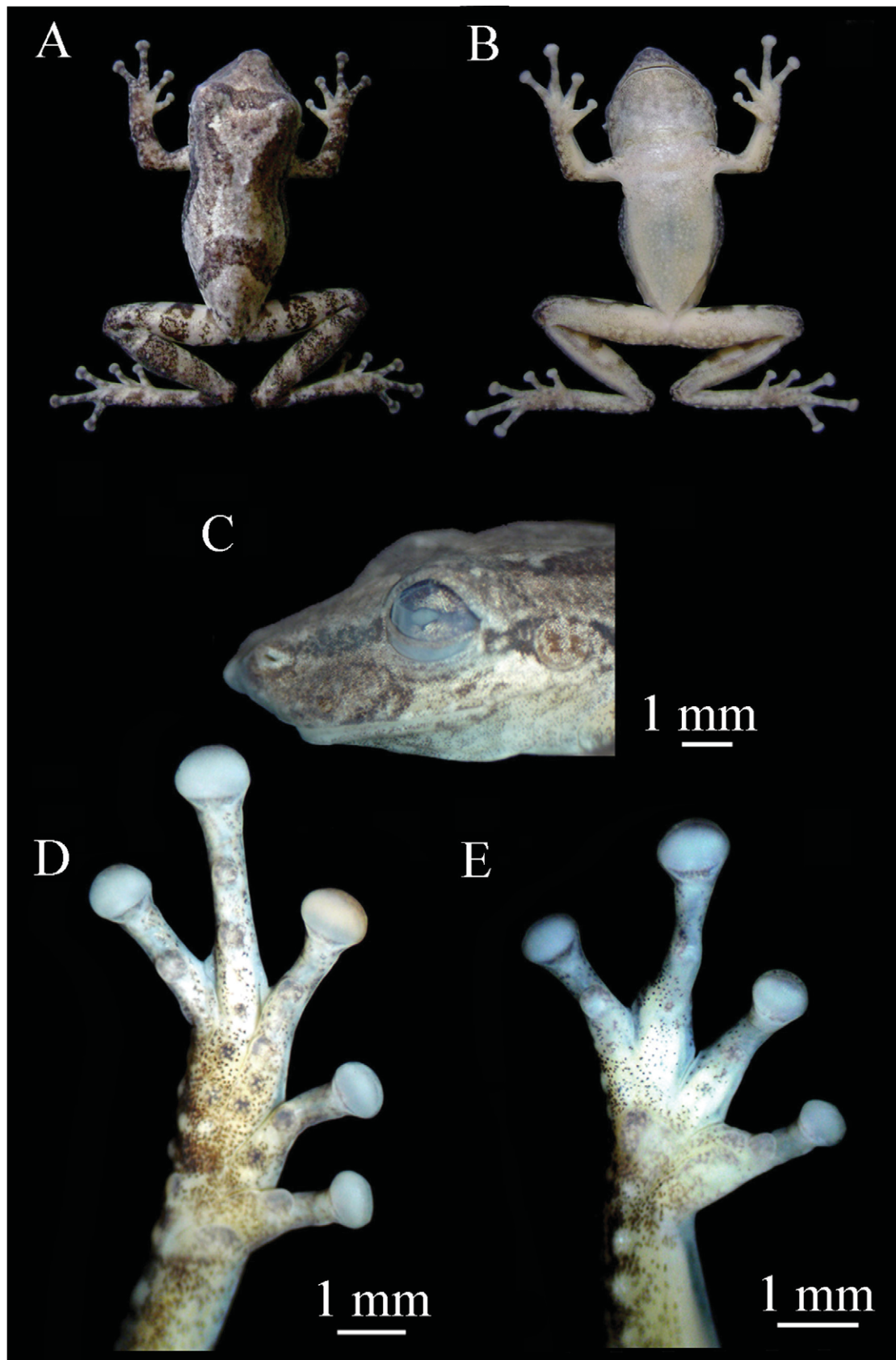


FIGURE 1. *Scinax cosenzai* **sp. nov.** Holotype (MNRJ 75462; SVL 19.34 mm): dorsal view (A), ventral view (B), lateral view of the head (C), plantar view of the foot (D), and palmar view of the hand (E).

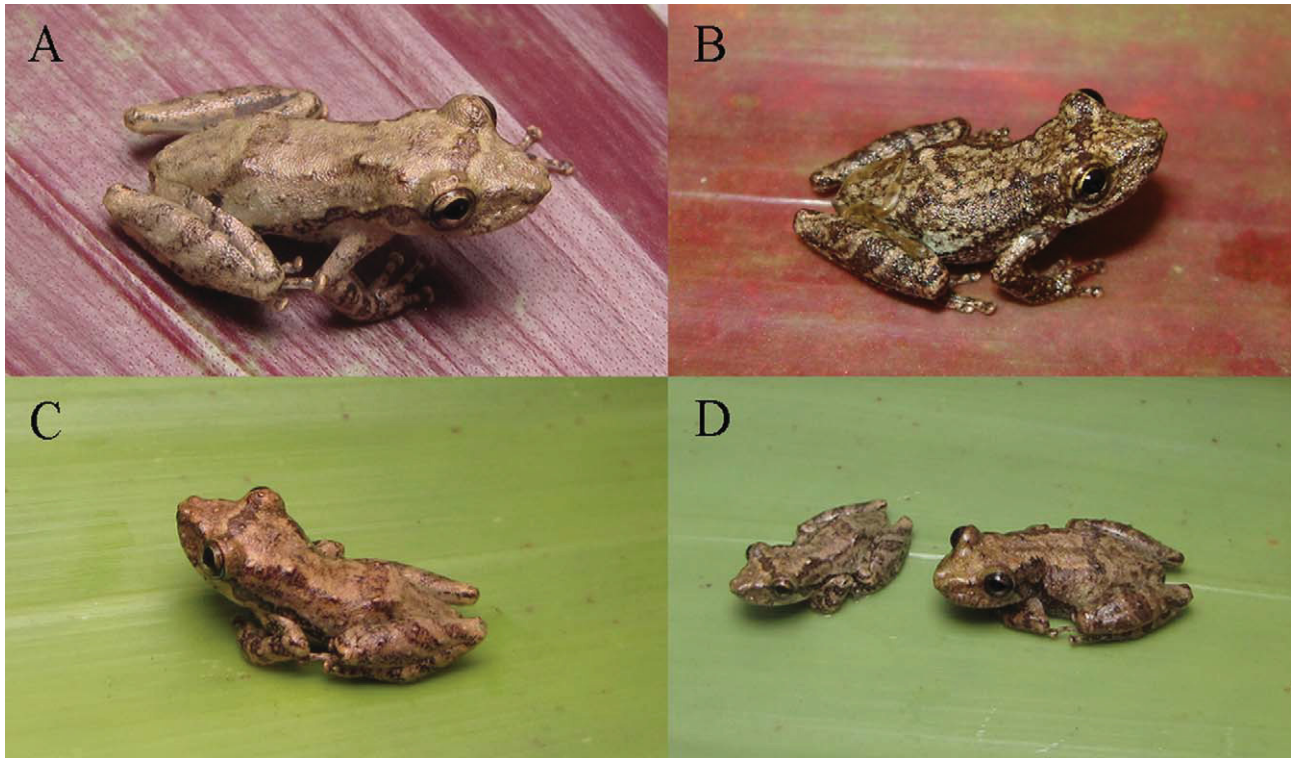


FIGURE 2. Individuals of *Scinax cosenzai* **sp. nov.**: (A) and (B) not collected adult males in life from the new species type locality; (C) MZUFV 11461, 18.45 mm SVL; (D) adult male (18.45 mm SVL) and female (23.59 mm SVL) of *S. cosenzai* **sp. nov.** (MZUFV 11461 and MZUFV 11462) evidencing the female larger size.

The advertisement call of *S. peixotoi* (3–5 notes and duration of 146–232 ms; Brasileiro *et al.* 2007a) is shorter than that of the new species (the calls of *Scinax cosenzai* **sp. nov.** with 3–5 notes have duration of 512.75–941.81 ms). The advertisement call of *S. arduous* (4–6 notes and duration of 198–328 ms; Pombal & Bastos 2003) is shorter than that of the new species (the calls of *Scinax cosenzai* **sp. nov.** with 4–6 notes have duration of 812.25–1395.75 ms). The territorial call of *S. arduous* differs from the vocalization of the new species in having only one note (Pombal & Bastos 2003) (the vocalization of *Scinax cosenzai* **sp. nov.** has at least 2 notes). The advertisement call of *S. perpusillus* (3–6 notes and duration of 92–174 ms; Pombal & Bastos 2003) is shorter than that of the new species (the calls of *Scinax cosenzai* **sp. nov.** with 3–6 notes have duration of 512.75–1395.75 ms). Pombal and Bastos (2003) described a second type of call of *S. perpusillus*, also shorter than that of the new species, with 6–12 notes and duration of 314–400 ms (the calls of *Scinax cosenzai* **sp. nov.** with 6–12 notes have duration of 892.81–2066.75 ms). These authors also mentioned the existence of a third type of call with only one note and duration of 185s, 435s and 508s (the calls of *Scinax cosenzai* **sp. nov.** have at least two notes).

Description of holotype. (Figs. 1, 2) Male; body slender; head longer than wide; snout protruding in lateral view and acuminate in dorsal view; nostrils rounded; prominent medial process between the nostrils; canthus rostralis distinct; loreal region concave; eye slightly protuberant; tympanum distinct; discrete subgular vocal sack; tongue round and large; vomerine teeth in two arc shape series between choanae; medium-sized, elliptical choanae.

Arms slender; forearms slightly robust; fingers slender and medium-sized, relative lengths I<IV<II<III (Fig. 1E); fingers not webbed; discs elliptical, slightly wider than long; outer metacarpal tubercle large, bifid; inner metacarpal tubercle elliptical, weakly developed; subarticular tubercles evident, rounded, single; subarticular tubercle in the fourth finger more developed than others.

Legs moderately robust; tibia longer than thigh; sum of thigh and tibia size smaller than SVL; toe disks elliptical, faintly wider than long, about the size of the finger disks; toes with relative lengths I<II<V<III<IV (Fig. 1D); feet with round metatarsal tubercles (inner more developed than outer); subarticular tubercles evident, rounded and single; numerous tubercles on the posterior skin of the feet and tarsus. Webbing formula I – II 2+ – 3+ III 2 – 3+ IV 3 – 2 V; dorsal skin with a few tubercles; ventral skin rugose; belly and chest granular.

Dorsum light-gray with an evident interorbital dark bar; discreet dark line on the canthus rostralis; dark longitudinal stripe originating at edge of each eye and running towards and nearly reaching the inguinal region; transver-

sal dark bars originating on each inguinal region and converging on the third portion of the dorsum in an inverted V-shaped figure; transversal dark bars along arms and legs until the tips of fingers and toes; gula region with some irregular dark patches; ventral surfaces white, but darker on the undersurfaces of tibia, tarsus, feet and cloacal region. In life, the hidden portion of thigh, calf and inguinal region with some irregular bright yellow colored patches. In preservative, these patches become white.

Measurements of the holotype (mm). SVL 19.34, HEL 7.05, HW 6.94, THL 8.87, TBL 10.01, FL 7.27, HL 5.18, ED 2.53, TD 1.05, IOD 2.25, END 2.42, IND 1.95.

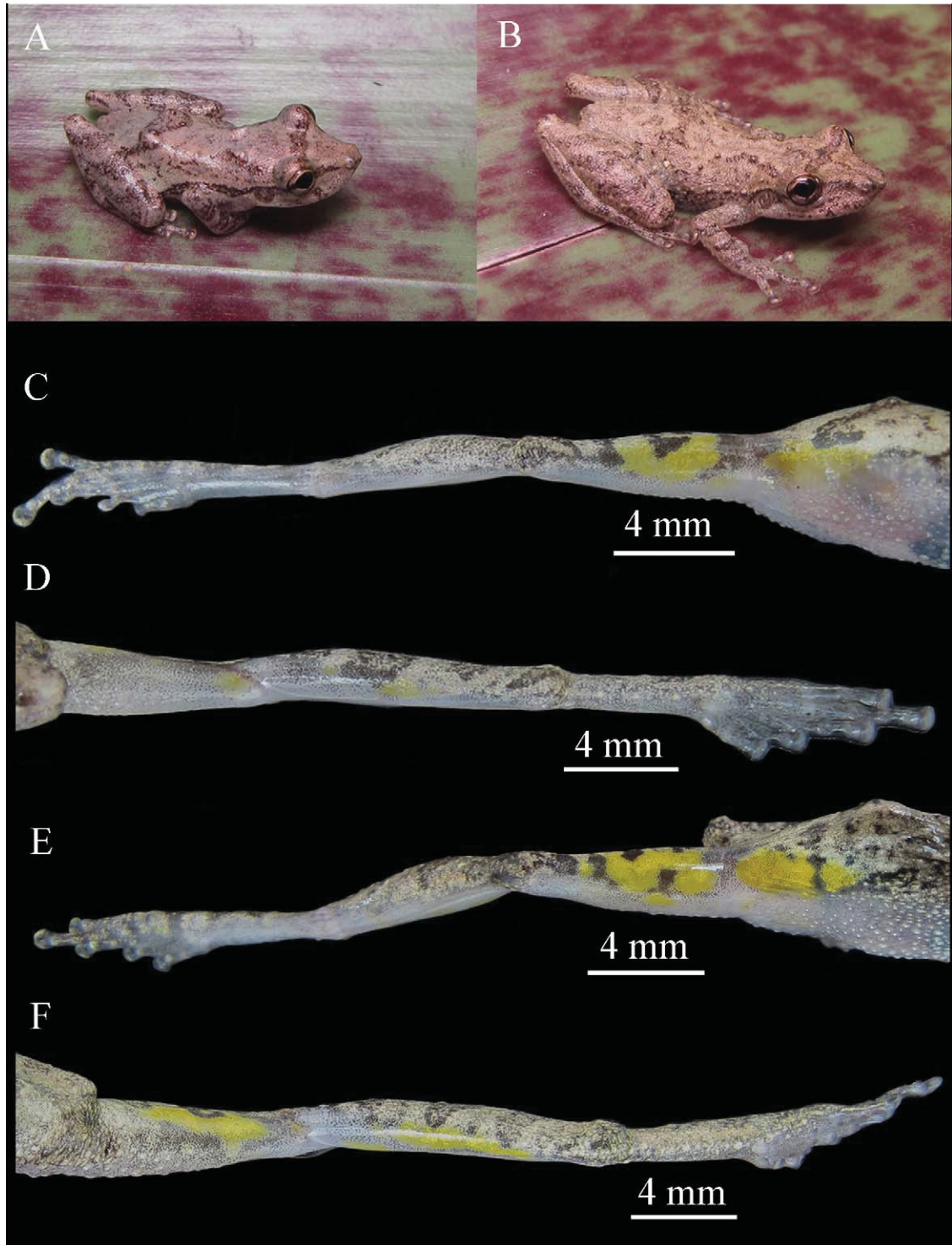


FIGURE 3. *Scinax cosenzai* sp. nov.: (A) male MZUFV 11523; (B) female MZUFV 11524; (C, D) irregular bright yellow colored patches on the inguinal region and hidden portion of thigh and tibia from male MZUFV 11523 and (E, F) female MZUFV 11524.

TABLE 1. Number of notes per call (number of recorded calls in parenthesis), call duration, interval between notes and dominant frequency of *Scinax cosenzai* **sp. nov.**. *One of the calls with one pair of merged notes **Two of the calls with one pair of merged notes.

Notes/call (Number of calls)	Call duration (ms)	Interval between notes (ms)	Dominant frequency (Hz)
2 (7)	186.77 (177.62–220.12; SD=14.95)	100.232 (87.00–110.44; SD=8.14; n=7)	4073.41 (3872.33–4555.06; SD=231.97)
3 (9)	583.33 (512.75–747.81; SD=71.81)	230.21 (815.00–516.50; SD=145.73; n=18)	4073.41 (3872.33–4555.06; SD=231.97)
4 (6)	882.364 (812.25–1018.5; SD=80.61)	244.73 (74.00–400.12; SD=120.98; n=18)	3886.89 (3375.91–4127.01; SD=273.22)
5 (3)	967.58 (931.43–991.00; SD=31.75)	191.31 (77.62–397.00; SD=122.25; n=12)	3964.79 (3877.77–4127.01; SD=140.61)
6 (4)	1148.07 (892.81–1395.75; SD=249.63)	185.65 (35.00–439.00; SD=135.64; n=20)	4002.91 (3753.61–4250.25; SD=202.76)
7 (3)*	1338.48 (1247.06–1428.63; SD=90.79)	183.68 (30.00–372.93; SD=121.72; n=17)	4027.82 (3877.77–4316.09; SD=249.72)
10 (2)**	942.75; 1132.19	68.53 (13.75–210.75; SD=54.74; n=16)	3949.33; 4135.09
11 (3)*	1380.33 (1062.75–1580.25; SD=278.09)	88.07 (18.18–403.43; SD=98.73; n=29)	3984.85 (3941.26–4070.48; SD=74.16)
12 (3)*	1748.08 (1266.12–2066.75; SD=242.26)	106.81 (10.37–443.25; SD=125.22; n=32)	4568.52 (4563.14–4571.21; SD=4.66)
13 (1)	1790.50	94.24 (23.37–487.81; SD=134.43; n=12)	4175.47
14 (1)	1784.69	87.16 (10.00–381.87; SD=109.69; n=13)	4127.01

Variation. In preservative, as in life, coloration of dorsum varies from clear-gray to dark-gray (Fig. 2). Interorbital and dorsal bars are not evident in some individuals. Webbing formulae varies among specimens I – II 2 – 3+ III (2+ – 2-) – (3+ – 3) IV 3+ – 2 V. Females are larger than males. Range, mean and standard deviation of the measurements of 30 males and seven females are given in Table 2.

TABLE 2. Range, mean and standard deviation (SD) of some measurements (mm) of *Scinax cosenzai* **sp. nov.** males (N=30) and females (N=7): snout-vent length (SVL); head length (HEL); head width (HW); thigh length (THL); tibia length (TBL); foot length (FL); hand length (HL); eye diameter (ED); tympanum diameter (TD); interorbital distance (IOD); eye-nostril distance (END); and internostril distance (IND).

Character	Male (N=30)			Female (N=7)		
	Mean	SD	Range	Mean	SD	Range
SVL	18.99	0.92	17.29–20.97	23.37	0.44	22.65–24.02
HEL	7.20	0.34	6.64–7.85	8.54	0.36	8.14–9.02
HW	6.67	0.27	6.19–7.20	7.96	0.25	7.55–8.20
THL	8.67	0.59	7.33–9.73	10.52	0.52	9.73–11.15
TBL	9.65	0.54	8.74–11.29	11.76	0.90	10.54–13.15
FL	7.34	0.39	6.69–8.33	9.10	0.73	8.23–10.35
HL	5.10	0.27	4.62–5.55	6.11	0.61	5.47–7.35
ED	2.12	0.23	1.62–2.60	2.33	0.20	2.00–2.60
TD	0.99	0.08	0.82–1.20	1.15	0.10	1.04–1.32
IOD	2.53	0.18	2.24–2.96	2.74	0.24	2.25–3.05
END	2.39	0.13	2.12–2.80	2.59	0.25	2.26–3.04
IND	1.78	0.10	1.60–2.00	2.06	0.15	1.85–2.35

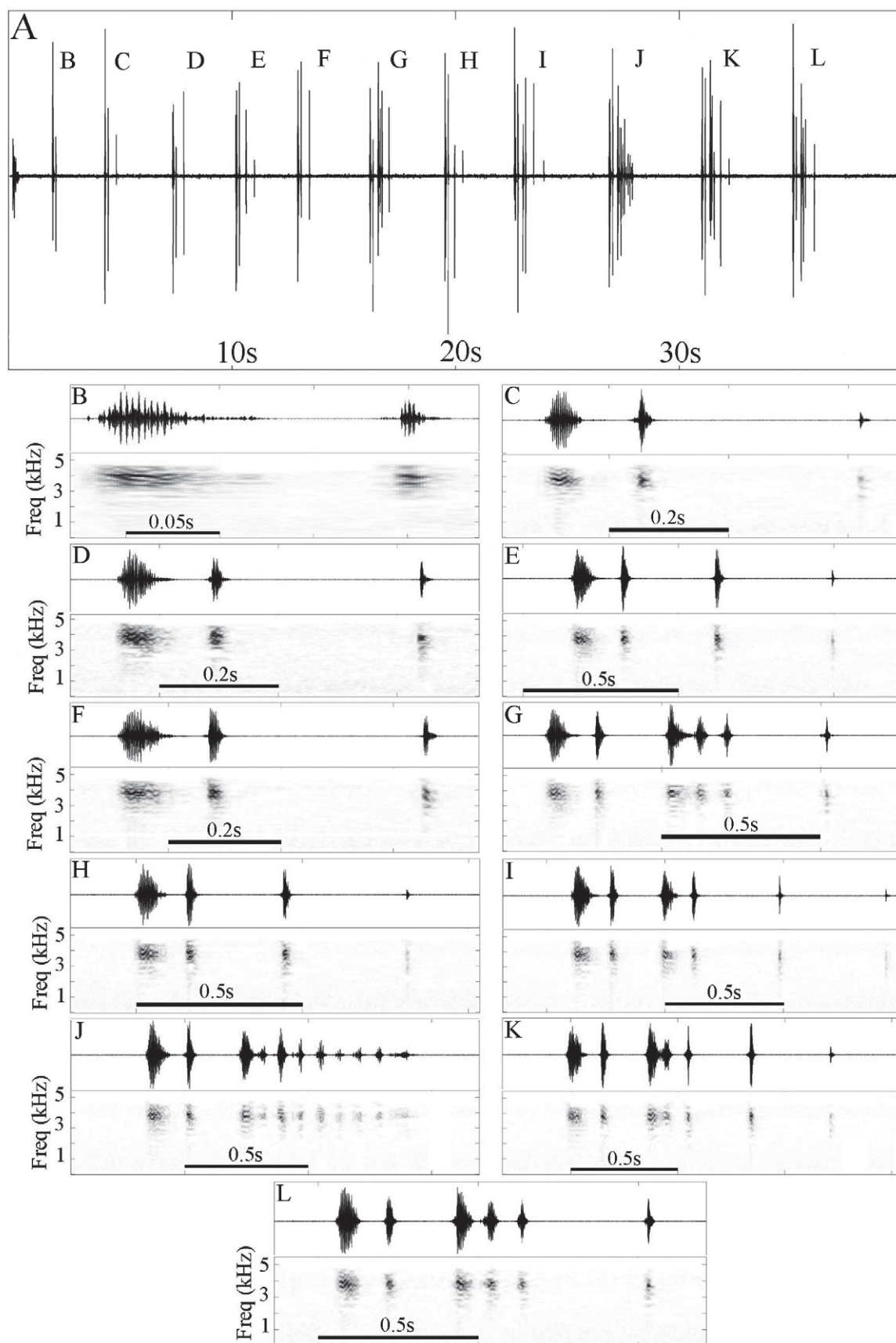


FIGURE 4. *Scinax cosenzai* sp. nov. vocalization: (A) sonogram of a call series with 11 calls emitted by a single male; (B–L) sonogram and spectrogram of these 11 calls.

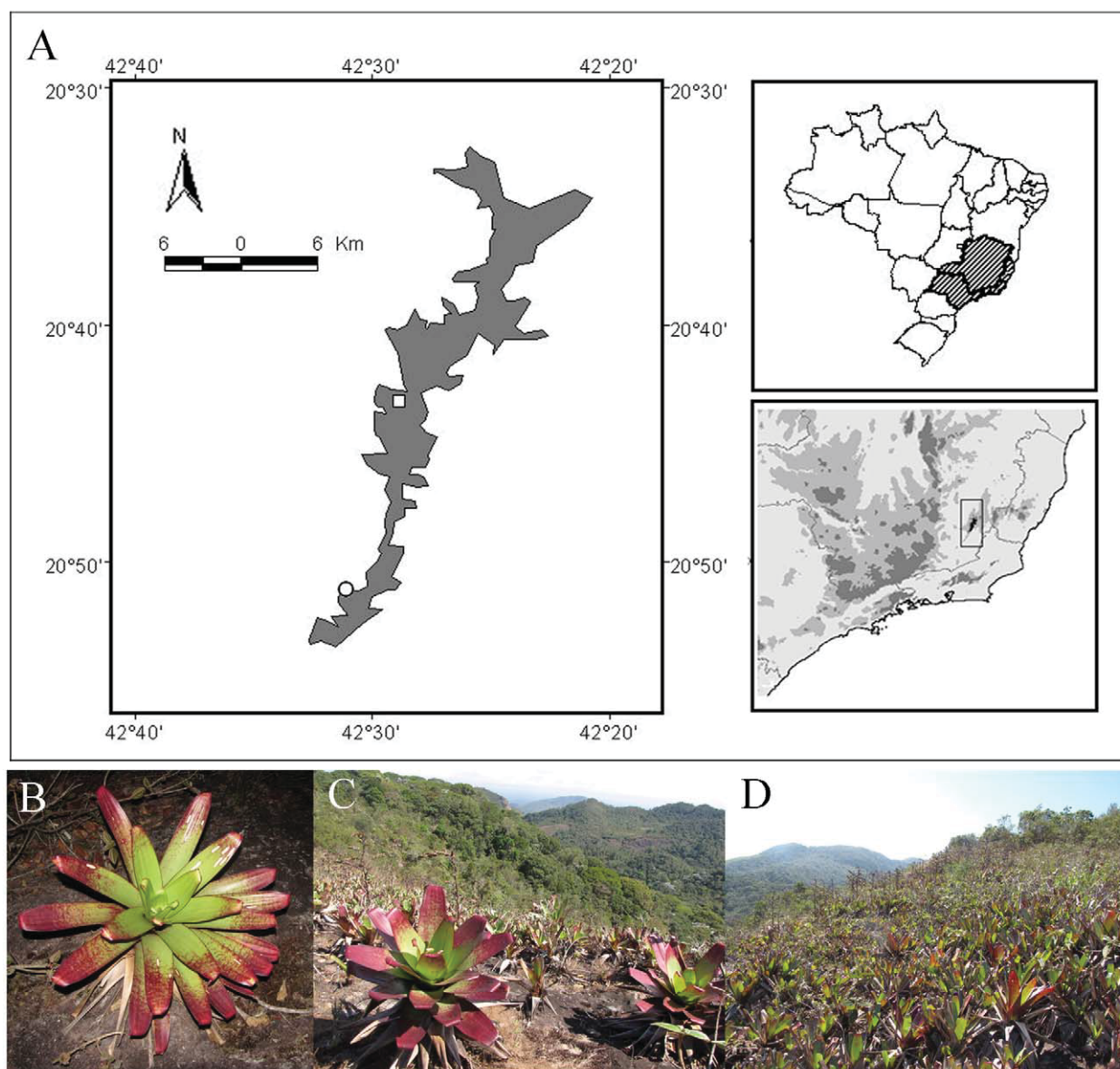


FIGURE 5. (A) Map of the Parque Estadual da Serra do Brigadeiro, State of Minas Gerais, Brazil with the location of two collecting sites of *Scinax cosenzai* **sp. nov.** Square type locality (PESB, Municipality of Araponga; 20°43'13.5" S; 42°28'48.7" W), circle a second locality (Municipality of Ervália, in the surroundings of the PESB; 20°51'9.24" S; 42°31'5.56" W); (B) *Alcantarea extensa*, species of bromeliad inhabited by the new species; (C) and (D) show different views of the Lage das Bromélias, a rocky outcrop where the new species was found.

Natural history notes. Calling activity was more common during the rainy season at night. As observed in others species from the *S. perpusillus* group (Oliveira & Navas 2004; Brasileiro *et al.* 2007a), *Scinax cosenzai* **sp. nov.** was more frequently found in clustered bromeliads. We observed a few spawnings, with one or two eggs each, stuck to lateral leaves (as also reported for other species of the group by Alves-Silva & Silva 2009) a few centimeters above the water accumulated by the bromeliad. Tadpoles were also observed in the water of bromeliads and frequently two individuals were observed sharing the same leaf axil. When we were noticed by the tadpoles they usually dived to the bottom of the accumulated water, as also reported for *Scinax tupinamba* by Silva and Alves-Silva (2009).

Distribution. The new species seems to be abundant in *Alcantarea extensa* (Bromeliaceae), a ground bromeliad commonly found in the rocky outcrops from Parque Estadual da Serra do Brigadeiro—PESB (Fig. 5), a conservation unit with approximately 13,000 ha from the Atlantic Rain Forest biome managed by Instituto Estadual de Florestas—IEF, in the northern part of the Mantiqueira Mountain Range Complex, State of Minas Gerais (Cruz *et*

al. 2007; Caramaschi *et al.* 2008). We collected specimens from two rocky outcrops: the type locality, located in the PESB, and another outcrop, located in the surroundings of the PESB (Fig. 5). As *Alcantarea extensa* is commonly found in others rocky outcrops from the Zona da Mata region in the State of Minas Gerais (Versieux & Wendt 2006), we believe that the new species may also occur in some of these other rocky outcrops and may not be in danger of extinction.

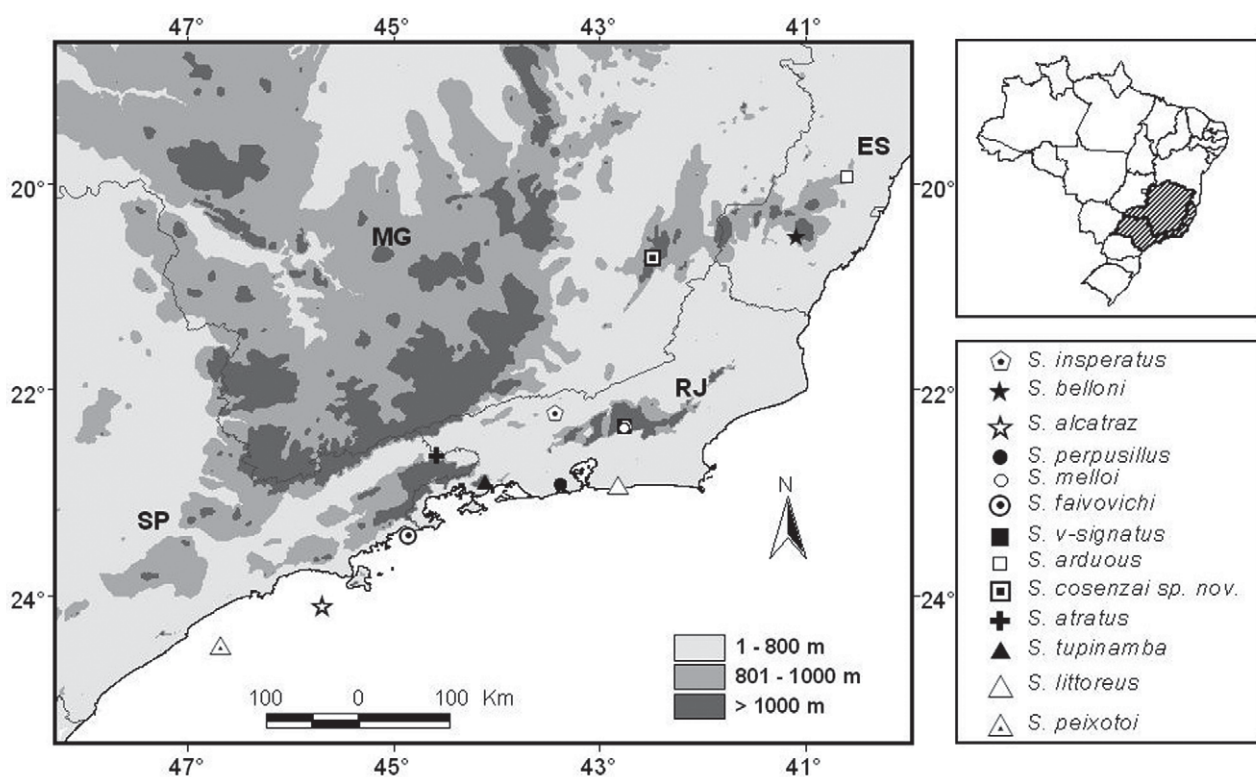


FIGURE 6. Type localities of species in the *Scinax perpusillus* group.

Etymology. The specific name honors the biologist Braz Antônio Pereira Cosenza for his contributions to the studies of flora and fauna of Serra do Brigadeiro.

Additional remarks. As observed by Silva and Alves-Silva (2008), species from the *Scinax perpusillus* group from outside the geographic limits sampled by Peixoto (1987), usually referred to as *Scinax perpusillus*, *Scinax* aff. *perpusillus* or *Scinax* gr. *perpusillus* (see Heyer *et al.* 1990; Pombal & Gordo 2004; Oliveira & Navas 2004; Carvalho-e-Silva *et al.* 2008; Feio *et al.* 2008; Bertoluci *et al.* 2009; Lacerda *et al.* 2009), may represent species not yet recognized and described. In spite of such problematic taxonomy, the advertisement call of only five species has been somewhat described (*Scinax arduous*, *S. insperatus*, *S. peixotoi*, *S. perpusillus* and *S. v-signatus*). However, the vocalization of these species has been described in two different manners: Heyer *et al.* 1990, Pombal and Bastos (2003) and Brasileiro *et al.* 2007a described each call of a call series while Alves-Silva and Silva (2009) and Silva and Alves-Silva (2008) referred to the entire call series as a single call, referring to notes and pulses what previous studies considered respectively as single calls and notes. We agree with Silva and Alves-Silva (2011) in believing that these previous studies did not consider the social interactions during vocalizations and that the described vocalization probably represents only a part of the entire call (herein referred to as call series). We did not compare the vocalization of *S. cosenzai* **sp. nov.** to those described for *S. insperatus*, *S. perpusillus* and *S. v-signatus* presented by Alves-Silva and Silva (2009) and Silva and Alves-Silva (2011) because these studies described only duets, or calls emitted when a female approached the male, while the recorded vocalizations from *S. cosenzai* **sp. nov.** were emitted by isolated males. We agree with Alves-Silva and Silva (2009) and Silva and Alves-Silva (2011) in considering further investigation necessary in order to establish the universality of call structure for the species from the *S. perpusillus* group.

As observed in Figure 6, the type localities of *Scinax alcatraz*, *S. faivovichii* and *S. peixotoi* are associated to coastal islands from the state of São Paulo (until now, considered endemic to these islands). *Scinax littoreus*, *S.*

perpusillus and *S. tupinamba* have type localities associated to lowland coastal areas in the state of Rio de Janeiro. *Scinax arduous* and *S. belloni* have distribution associated to mountain regions in the state of Espírito Santo, while *S. insperatus*, *S. melloi* and *S. v-signatus* are found in the state of Rio de Janeiro and *S. atratus* in the state of São Paulo. *Scinax cosenzai* **sp. nov.** is the first species belonging to the *S. perpusillus* group described in the State of Minas Gerais.

Bertoluci *et al.* 2009 provided the record of specimens referred to as *Scinax* sp. 3 (gr. *perpusillus*) in the Estação Ambiental de Peti, in Minas Gerais state, but they only cited the field number, not mentioning the deposition of voucher specimens in any public collection. If this identification is confirmed, Bertoluci *et al.* 2009 represents the first record of a species belonging to the *S. perpusillus* group in the Espinhaço mountain range. The first record of a species belonging to the *Scinax perpusillus* group in the state of Minas Gerais was made by Feio *et al.* 2008 reporting the existence of a population of *Scinax* gr. *perpusillus* in the Parque Estadual da Serra do Brigadeiro. Lacerda *et al.* 2009 also referred to this population as species that has probably not yet been described. The present study describes this new species bringing to 13 the number of species included in the *S. perpusillus* group.

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APPENDIX 1. Additional specimens examined.

- Scinax alcatraz*.—BRAZIL, State of São Paulo: São Sebastião: Ilha dos Alcatrazes (MNRJ 43140–43143, topotypes).
- Scinax arduous*.—BRAZIL, State of Espírito Santo: Santa Teresa (RU MNRJ 28373–28375, 30387, 30441, 34926–34930, 38436–38439, 40695–40699; MBML 6780, 6781, topotypes).
- Scinax atratus*.—BRAZIL, State of São Paulo: São José do Barreiro, Serra da Bocaina (WCAB 49641–50, paratypes).
- Scinax belloni*.—BRAZIL, State of Espírito Santo: Castelo: Ilha Forno Grande (MNRJ 64655–64660, topotypes).
- Scinax faivovich*.—BRAZIL, State of São Paulo: Ubatuba, Ilha de Porcos Pequena (MNRJ 40901–40903, paratopotypes).
- Scinax insperatus*.—BRAZIL, (MNRJ 72813, holotype; MNRJ 72814–72820, paratypes).
- Scinax littoreous*.—BRAZIL, State of Rio de Janeiro: Maricá, Baumbuí (EI 7562, holotype; EI 5221–29, 7572–79, paratypes); Rio de Janeiro (MNRJ 47524, 47529, 47530); Niterói, Serra da Tiririca (MNRJ 59635, 59648, 59649, 59661, 59692, 59697); Niterói, Itacoatiara, Pedra de Itacoatiara (MNRJ 74652, 74653, 74655, 74656).
- Scinax melloi*.—BRAZIL, state of Rio de Janeiro: Teresópolis, Parque Nacional da Serra dos Órgãos (EI 7608, holotype; 7609–13, 7617–27 and 7715, topotypes).
- Scinax peixotoi*.—BRAZIL, state of São Paulo: Itanhaém, Queimada Grande Island (MNRJ 39757–39758, paratopotypes).
- Scinax perpusillus*.—BRAZIL, state of Rio de Janeiro: Nova Iguaçu, Tinguá (MNRJ 32021); Rio de Janeiro (MNRJ 35491, 40644–40659, 43131–43135, 43152, topotypes).
- Scinax tupinamba*.—BRAZIL, State of Rio de Janeiro: Mangaratiba, Fazenda Bom Jardim (RU 1390, 1392, 1437 and 3657, topotypes); Reserva Rio das Pedras (MNRJ 40723–25, 72633, topotypes).
- Scinax v-signatus*.—BRAZIL, state of Rio de Janeiro: Teresópolis, Serra dos Órgãos (MNRJ 3607, holotype; MNRJ 3608, 3609, paratypes; MNRJ 44569–44577 and RU 6791–6794, topotypes).