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The amphibians of the state of Rio de Janeiro, Brazil: an updated and commented list

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Abstract. The amphibian fauna of the state of Rio de Janeiro, in southeastern Brazil, is characterized by high species richness and rates of endemism, and is still insufficiently known. A first list of amphibian species with occurrence in the state was published in 2004 and reported 166 taxa, but since then many new records, descriptions of new taxa, and revalidations and synonymizations of species have consistently improved the knowledge about the state's amphibian biodiversity. Thus, a review and update of that list was deemed necessary. We herein present an updated and commented list of amphibian species occurring in the state of Rio de Janeiro based on a survey of the literature. We recorded the occurrence of a total of 201 species of amphibians (197 anurans and four caecilians) in Rio de Janeiro, with 54 of them (*ca.* 27%) considered to be endemic of the state. Our study presents an increase in species richness of 21% since the publication of the previous list, indicating a consistent advance in knowledge of the composition of the amphibian fauna in the state. In spite of its relatively small territorial extension (total area *ca.* 43,800 km^2), the state of Rio de Janeiro contains nearly 20% of the amphibian species known to occur in Brazil and around 40% of those occurring in the Atlantic Forest biome. Thus, that state constitutes an important reservoir of amphibian biodiversity in the Atlantic Forest biome and in Brazil, as a whole.

Key-Words. Anura; Atlantic Forest; Conservation; Gymnophiona; Species list.

INTRODUCTION

The Brazilian Atlantic Forest is one of the world's most threatened biomes, with only *ca.* 12% of its original forest cover remaining nowadays (Ribeiro *et al.,* 2009), and is considered one of the world's 35 biodiversity *hotspots* (Mittermeier, 2005). The state of Rio de Janeiro, with around 43,800 km^2 of total area and situated between 20-24°S and 45-41°W, is the Brazilian state that preserves the greatest proportional percentage (20.3% of its territory) of Atlantic Forest remnants (Bergallo *et al.,* 2009). A combination of the state's geographic location with its heterogeneous landscape (ranging from sea-level to mountain peaks over 2,000 m high) favors the occurrence of multiple phytophysiognomies (mangroves, restingas, umbrophilous forests, semi-deciduous forests, high-altitude fields, and inselbergs). This, in turn, maintains high rates of biodiversity and endemism for different groups of the fauna and flora (Jenkins & Pimm, 2006; Nascimento & Campos, 2011).

Regarding its amphibian fauna, the state of Rio de Janeiro houses a remarkable diversity as well as a high number of species endemic to the state (Rocha *et al.,* 2005; Cruz & Feio, 2007; van Sluys *et al.,* 2009; Nascimento & Campos, 2011). The first list of amphibians reported to occur in the state of Rio de Janeiro was published by Rocha *et al.* (2004), who listed 166 species. Since then, there has been an increase in species inventories performed throughout the state, improving the knowledge about the composition and distribution of the state's amphibian fauna (*e.g.,* Almeida-Gomes *et al.,* 2008, 2010, 2014; Carvalho-e-Silva *et al.,* 2008; Silva *et al.,* 2008; Siqueira *et al.,* 2011a, b; Salles *et al.,* 2009; Silva-Soares *et al.,* 2010; Vrcibradic *et al.,* 2011; Martins *et al.,* 2012, 2014; Telles *et al.,* 2012; Bittencourt-Silva & Silva, 2013; Pontes *et al.,* 2015). Additionally, several species have been added to the state's amphibian list, either through reports of new occurrence records (*e.g.,* Vrcibradic *et al.,* 2006; Silva-Soares *et al.,* 2009; Silveira *et al.,* 2010; Caram *et al.,* 2011; Pederassi *et al.,* 2015), or through descriptions, revalidations or reassessments of taxa (*e.g.,* Carvalho-e-Silva & Carvalho-e-Silva, 2005; Caramaschi & Pombal, 2006; Canedo & Pombal, 2007; Pombal *et al.,* 2008; Prado & Pombal, 2008; Silva & Alves-Silva, 2008; Carvalho-e-Silva *et al.,* 2009, 2010; Targino *et al.,* 2009; Pombal, 2010; Pombal & Izecksohn, 2011; Weber *et al.,* 2011; Silva & Alves-Silva, 2011; Nunes *et al.,* 2012; Silva &

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Ouvernay, 2012; Dias *et al.,* 2013; Caramaschi *et al.,* 2013; Pimenta *et al.,* 2014; Hepp *et al.,* 2015).

Within the last twelve years or so there has been a considerable increase in studies with molecular phylogenetics of amphibians, resulting in extensive nomenclatural changes at the familial, subfamilial and generic levels (*e.g.,* Faivovich *et al.,* 2005; Frost *et al.,* 2006; Grant *et al.,* 2006; Hedges *et al.,* 2008; Guayasamin *et al.,* 2009; Wilkinson *et al.,* 2011; Padial *et al.,* 2014; Castroviejo-Fisher *et al.,* 2015). Considering such changes, together with the aforementioned increase in the amount of information regarding the amphibian fauna of Rio de Janeiro after more than a decade since the list of Rocha *et al.* (2004) came out, we think that list needs to be reevaluated and updated. Thus, we here present a revised and updated list of the amphibian species reported to occur in the state of Rio de Janeiro.

MATERIALS AND METHODS

The current knowledge about the composition and species richness of amphibians occurring in the state of Rio de Janeiro, in southeast Brazil, was evaluated based on a survey of the literature. Extensive searches were carried out on the websites *Web of Science* of the *Institute for Scientific Information* (http://apps.isiknowledge.com) and *Google Scholar* (http://scholar.google.com.br) using the following combinations of key words: *"Anura* and Rio de Janeiro", "amphibia* and Rio de Janeiro", "herpeto* and Rio de Janeiro", "new and anura and Rio de Janeiro".* Additionally, databases of the sites Amphibian Species of the World (http://research.amnh.org/vz/herpetology/amphibia) and IUCN (*International Union for Conservation of Nature:* www.iucnredlist.org), as well as issues of the journal Herpetological Review were also mined for records. All the above sources were searched between June 2014 and December 2015, and searches were directed towards works published from 2004 onwards. We avoided including undescribed species or taxa of uncertain taxonomic status (*i.e.,* treated in the literature as "sp.", "aff." or "cf.") in our list, except in a few particular cases (see Results and Discussion). Scientific nomenclature used throughout the present work follows Frost (2017), unless stated otherwise (see below).

Duellman *et al.* (2016) recently reviewed the systematics of the speciose family Hylidae and proposed a number of taxonomic changes. These include the elevation of the three recognized hylid subfamilies to family level, adoption of the unranked name Arboranae for the clade formerly known as Hylidae, new subfamilial arrangements, and partitioning of some genera (including *Phyllomedusa* and *Scinax*). As those proposed changes are still too recent and are potentially controversial (due to the splitting of monophyletic taxa; see Vences *et al.,* 2013), we prefer not to adopt them here, since we are not sure if they will be widely accepted.

Concerning their conservation *status* (*sensu* IUCN), the species under some level of threat were classified as data deficient (DD), near threatened (NT), endangered (EN), vulnerable (VU), critically endangered (CR), or extinct (EX). Classification of species in these categories at both the global and national levels followed IUCN (2016) and the Official National List of Species of the Fauna Threatened with Extinction (issued in 2014 by the Brazilian Ministry of Environment – MMA), respectively.

RESULTS AND DISCUSSION

Based on our literature survey and on the previous list of Rocha *et al.* (2004), we compiled a list of 201 species of amphibians (197 belonging to the Order Anura and four to the Order Gymnophiona) reported to occur in the state of Rio de Janeiro, of which 54 (26.9%) are considered endemic to the state (Table 1). A total of 40 species were added to the amphibian list of Rocha *et al.* (2004), whereas five (*Allobates carioca, Bokermannohyla clepsydra, Cycloramphus lutzorum, Ischnocnema* gr. *lactea,* and *I. nigriventris;* see below) were removed from the list based on our revision. The present updated list thus represents an increase of 21% in the number of species reported for the state of Rio de Janeiro after thriteen years. This evidences a consistent improvement in knowledge of the composition and richness of the amphibian fauna of the state, driven by an increase in local faunal inventories and in systematic studies during the last decade. The description of 26 new amphibian species known to occur in the state of Rio de Janeiro within the 2004-2015 period, as well as the discovery of species that still remain to be formally described (*e.g.,* Siqueira *et al.,* 2011a, b; Bittencourt-Silva & Silva, 2013) reinforce the notion that many amphibian species inhabiting the Atlantic Forest remain unknown (Pimm *et al.,* 2010).

Most of the new records added herein to the previous list of Rocha *et al.* (2004) represent descriptions of new species or revalidations of taxa previously in synonymy, as well as new occurrence records for the state. However, two of the new additions to the list represent "old" (pre-2004) records that have been apparently overlooked by Rocha *et al.* (2004): *Scinax angrensis* (as noted by Carvalho-e-Silva *et al.,* 2008), a species that is actually endemic to the state, and *Brachycephalus hermogenesi,* whose occurrence in the municipality of Paraty had been reported in the original description (Giaretta & Sawaya, 1998).

Scinax x-signatus (Spix, 1824) is a problematic taxon, as its imprecise type locality, succinct description by Spix (1824) and presumably lost holotype preclude this name from being confidently applied to any existing population of treefrogs at present (Pombal *et al.,* 1995; Sturaro & Peloso, 2014). *Scinax x-signatus* was not included by Rocha *et al.* (2004) in their list of the state's amphibians, despite Izecksohn & Carvalho-e-Silva (2001) having included this taxon among the amphibian species occurring in the municipality of Rio de Janeiro. Additionally, several recent studies have reported frogs identified as *Scinax x-signatus, Scinax* aff. *x-signatus,* or *Scinax* cf. *x-signatus* from various localities throughout the state (*e.g.,* Abrunhosa *et al.,* 2006; Silva *et al.,* 2008; Salles *et al.,* 2009;

Table 1. List of species of amphibians reported from the state of Rio de Janeiro, southeastern Brazil. Species considered endemic to the state are marked with an 'X'. Categories of threat are given at both global and national levels, as follows: data deficient (DD), near threatened (NT), endangered (EN), vulnerable (VU), critically endangered (CR) and extinct (EX). (*) species added to the list of Rocha *et al.* (2004); (**) species present on the list of Rocha *et al.* (2004) that had since undergone nomenclatural change or re-identification.

Taxa	Endemic	Category of threat	
		global	national
ANURA			
Aromobatidae			
Allobates olfersioides (Lutz, 1925)		VU	VU
Brachycephalidae			
Brachycephalus bufonoides Miranda-Ribeiro, 1920*	X		
Brachycephalus didactylus (Izecksohn, 1971)			
Brachycephalus ephippium (Spix, 1824)			
Brachycephalus garbeanus Miranda-Ribeiro, 1920*	X		
Brachycephalus hermogenesi (Giaretta & Sawaya, 1998)*			
Brachycephalus margaritatus Pombal & Izecksohn, 2011*	X		
Brachycephalus vertebralis Pombal, 2001	X	DD	
Ischnocnema bolbodactyla (Lutz, 1925)	X		
Ischnocnema concolor Targino, Costa & Carvalho-e-Silva, 2009*	X		
Ischnocnema erythromera (Heyer, 1984)	X	DD	
Ischnocnema gualteri (Lutz, 1974)	X		
Ischnocnema guentheri (Steindachner, 1864)	X		
Ischnocnema holti (Cochran, 1948)	X	DD	
Ischnocnema melanopygia Targino, Costa & Carvalho-e-Silva, 2009*	X		
Ischnocnema nanahallux Brusquetti, Thomé, Canedo, Condez, & Haddad, 2013*	X		
Ischnocnema nasuta (Lutz, 1925)			
Ischnocnema octavioi (Bokermann, 1965)			
Ischnocnema oea (Heyer, 1984)*		NT	
Ischnocnema parva (Girard, 1853)			
Ischnocnema venancioi (Lutz, 1958)			
Bufonidae			
Dendrophryniscus brevipollicatus Jiménez de la Espada, 1870			
Dendrophryniscus leucomystax Izecksohn, 1968			
Dendrophryniscus organensis Carvalho-e-Silva, Mongin, Izecksohn & Carvalho-e-Silva, 2010*	X		
Melanophryniscus moreirae (Miranda-Ribeiro, 1920)		NT	
Rhinella crucifer (Wied-Neuwied, 1821)			
Rhinella hoogmoedi Caramaschi & Pombal, 2006**			
Rhinella icterica (Spix, 1824)			
Rhinella ornata (Spix, 1824)*			
Rhinella pygmaea (Myers & Carvalho, 1952)			
Rhinella schneideri (Werner, 1894)			
Centrolenidae			
Vitreorana eurygnatha (Lutz, 1925)			
Vitreorana uranoscopa (Müller, 1924)			
Ceratophryidae			
Ceratophrys aurita (Raddi, 1823)			
Craugastoridae			
Euparkerella brasiliensis (Parker, 1926)	X		
Euparkerella cochranae Izecksohn, 1988	X		
Euparkerella cryptica Hepp, Carvalho-e-Silva, Carvalho-e-Silva & Folly, 2015*	X		
Haddadus binotatus (Spix, 1824)			
Holoaden bradei Lutz, 1958	X	CR	CR
Holoaden luederwaldti Miranda-Ribeiro, 1920		DD	EN
Holoaden pholeter Pombal, Siqueira, Dorigo, Vrcibradic & Rocha, 2008*	X	DD	
Cycloramphidae			
Cycloramphus boraceiensis Heyer, 1983			
Cycloramphus brasiliensis (Steindachner, 1864)	X	NT	
Cycloramphus carvalhoi Heyer, 1983		DD	
Cycloramphus eleutherodactylus (Miranda-Ribeiro, 1920)		DD	
Cycloramphus fuliginosus Tschudi, 1838			
Cycloramphus granulosus Lutz, 1929		DD	
Cycloramphus lithomimeticus Silva & Ouvernay, 2012*	X		
Cycloramphus ohausi (Wandolleck, 1907)	X	DD	EN
Cycloramphus organensis Weber, Verdade, Salles, Fouquet & Carvalho-e-Silva, 2011*	X	DD	
Cycloramphus stejnegeri (Noble, 1924)	X	DD	
Thoropa lutzi Cochran, 1938		EN	
Thoropa miliaris (Spix, 1824)			
Thoropa petropolitana (Wandolleck, 1907)	X	VU	EN
Zachaenus parvulus (Girard, 1853)			
Hemiphractidae			
Fritziana fissilis (Miranda-Ribeiro, 1920)			
Fritziana goeldii (Boulenger, 1895)			
Fritziana ohausi (Wandolleck, 1907)			
Fritziana ulei (Miranda-Ribeiro, 1926)*			
Gastrotheca albolineata (Lutz & Lutz, 1939)			
Gastrotheca ernestoi Miranda-Ribeiro, 1920		DD	
Gastrotheca fulvorufa (Andersson, 1911)		DD	
Hylidae			
Aparasphenodon brunoi Miranda-Ribeiro, 1920			
Aplastodiscus albofrenatus (Lutz, 1924)	X		
Aplastodiscus albosignatus (Lutz & Lutz, 1938)**			
Aplastodiscus arildae (Cruz & Peixoto, 1987)			
Aplastodiscus eugenioi (Carvalho-e-Silva & Carvalho-e-Silva, 2005)*		NT	
Aplastodiscus flumineus (Cruz & Peixoto, 1985)	X	DD	
Aplastodiscus leucopygius (Cruz & Peixoto, 1985)			
Aplastodiscus musicus (Lutz, 1949)	X	DD	
Boana albomarginata (Spix, 1824)			
Boana albopunctata (Spix, 1824)			
Boana bandeirantes (Caramaschi & Cruz, 2013)*			
Boana faber (Wied-Neuwied, 1821)			
Boana latistriata (Caramaschi & Cruz, 2004)*		DD	
Boana pardalis (Spix, 1824)			
Boana polytaenia (Cope, 1870)			
Boana prasina (Burmeister, 1856)			
Boana secedens (Lutz, 1963)	X	DD	
Boana semilineata (Spix, 1824)			
Bokermannohyla astartea (Bokermann, 1967)			
Bokermannohyla carvalhoi (Peixoto, 1981)	X		
Bokermannohyla circumdata (Cope, 1871)			
Bokermannohyla claresignata (Lutz & Lutz, 1939)		DD	
Bokermannohyla gouveai (Peixoto & Cruz, 1992)	X	DD	
Bokermannohyla hylax (Heyer, 1985)			
Dendropsophus anceps (Lutz, 1929)			
Dendropsophus berthalutzae (Bokermann, 1962)			
Dendropsophus bipunctatus (Spix, 1824)			
Dendropsophus branneri (Cochran, 1948)			
Dendropsophus decipiens (Lutz, 1925)			
Dendropsophus elegans (Wied-Neuwied, 1824)			
Dendropsophus giesleri (Mertens, 1950)			

Taxa	Endemic	Category of threat	
		global	national
Dendropsophus meridianus (Lutz, 1954)	X		
Dendropsophus microps (Peters, 1872)			
Dendropsophus minutus (Peters, 1872)			
Dendropsophus pseudomeridianus (Cruz, Caramaschi & Dias, 2000)			
Dendropsophus seniculus (Cope, 1868)			
Itapotihyla langfsdorffii (Duméril & Bibron, 1841)			
Phasmahyla cochranae (Bokermann, 1966)			
Phasmahyla cruzi Carvalho-e-Silva, Silva & Carvalho-e-Silva, 2009*	X		
Phasmahyla guttata (Lutz, 1924)			
Phrynomedusa marginata (Izecksohn & Cruz, 1976)			
Phrynomedusa vanzolinii Cruz, 1991			
Phyllodytes luteolus (Wied-Neuwied, 1824)*			
Phyllomedusa burmeisteri Boulenger, 1882			
Phyllomedusa rohdei Mertens, 1926			
Scinax albicans (Bokermann, 1967)	X		
Scinax alter (Lutz, 1973)			
Scinax angrensis (Lutz, 1973)*	X		
Scinax argyreornatus (Miranda-Ribeiro, 1926)			
Scinax ariadne (Bokermann, 1967)		DD	
Scinax atratus (Peixoto, 1989)		DD	
Scinax cardosoi (Carvalho-e-Silva & Peixoto, 1991)			
Scinax crospedospilus (Lutz, 1925)			
Scinax cuspidatus (Lutz, 1925)			
Scinax dolloi (Werner, 1903)*	X		
Scinax duartei (Lutz, 1951)			VU
Scinax eurydice (Bokermann, 1968)			
Scinax flavoguttatus (Lutz & Lutz, 1939)			
Scinax fuscovarius (Lutz, 1925)			
Scinax hayii (Barbour, 1909)			
Scinax hiemalis (Haddad & Pombal, 1987)*			
Scinax humilis (Lutz & Lutz, 1954)	X		
Scinax insperatus Silva & Alves-Silva, 2011*	X		
Scinax littoreus (Peixoto, 1988)	X		
Scinax melloi (Peixoto, 1989)		DD	
Scinax nasicus (Cope, 1862)*			
Scinax obtriangulatus (Lutz, 1973)			
Scinax perpusillus (Lutz & Lutz, 1939)			
Scinax similis (Cochran, 1952)			
Scinax trapicheiroi (Lutz & Lutz, 1954)	X	NT	
Scinax tupinamba Silva & Alves-Silva, 2008*	X		
Scinax tymbamirim Nunes, Kwet & Pombal, 2012*			
Scinax v-signatus (Lutz, 1968)			
Scinax aff. *x-signatus* (Spix, 1824)*	?		
Sphaenorhynchus orophilus (Lutz & Lutz, 1938)			
Sphaenorhynchus planicola (Lutz & Lutz, 1938)			
Trachycephalus imitatrix (Miranda-Ribeiro, 1926)			
Trachycephalus mesophaeus (Hensel, 1867)			
Trachycephalus nigromaculatus Tschudi, 1838			
Xenohyla truncata (Izecksohn, 1959)	X	NT	EN
Hylodidae			
Crossodactylus aeneus Müller, 1924	X	DD	
Crossodactylus boulengeri (De Witte, 1930)*			
Crossodactylus dispar Lutz, 1925		DD	
Crossodactylus gaudichaudii Duméril & Bibron, 1841			
Crossodactylus grandis Lutz, 1951		DD	
Crossodactylus werneri Pimenta, Cruz & Caramaschi, 2014*			
Hylodes asper (Müller, 1924)			
Hylodes charadranaetes Heyer & Cocroft, 1986	X	DD	
Hylodes fredi Canedo & Pombal, 2007*	X	DD	
Hylodes glaber (Miranda-Ribeiro, 1926)		DD	
Hylodes lateristrigatus (Baumann, 1912)			
Hylodes nasus (Lichtenstein, 1823)			
Hylodes ornatus (Bokermann, 1967)			
Hylodes phyllodes Heyer & Cocroft, 1986			
Hylodes pipilans Canedo & Pombal, 2007*	X	DD	
Hylodes regius Gouvêa, 1979		DD	
Hylodes sazimai Haddad & Pombal, 1995		DD	
Megaelosia goeldii (Baumann, 1912)			
Megaelosia lutzae Izecksohn & Gouvêa, 1987	X	DD	
Leptodactylidae			
Adenomera marmorata Steindachner, 1867			
Adenomera thomei (Almeida & Angulo, 2006)*			
Crossodactylodes pintoi Cochran, 1938	X	DD	
Leptodactylus flavopictus Lutz, 1926			
Leptodactylus fuscus (Schneider, 1799)			
Leptodactylus labyrinthicus (Spix, 1824)			
Leptodactylus latrans (Steffen, 1815)**			
Leptodactylus marambaiae Izecksohn, 1976	X		
Leptodactylus mystacinus (Burmeister, 1861)			
Leptodactylus natalensis Lutz, 1930			
Leptodactylus spixii Heyer, 1983			
Paratelmatobius lutzii Lutz & Carvalho, 1958		DD	CR
Paratelmatobius mantiqueira Pombal & Haddad, 1999*		DD	
Physalaemus angrensis Weber, Gonzaga & Carvalho-e-Silva, 2006*	X	DD	
Physalaemus cuvieri Fitzinger, 1826			
Physalaemus maculiventris (Lutz, 1925)			
Physalaemus marmoratus (Reinhardt & Lütken, 1862)**			
Physalaemus olfersi (Lichtenstein & Martens, 1856)			
Physalaemus signifer (Girard, 1853)			
Physalaemus soaresi Izecksohn, 1965	X	EN	CR
Pseudopaludicola sp.**	?		
Microhylidae			
Arcovomer passarellii Carvalho, 1954			
Chiasmocleis atlantica Cruz, Caramaschi & Izecksohn, 1997			
Chiasmocleis lacrimae Peloso, Sturaro, Forlani, Gaucher, Motta, & Wheeler, 2014**		EN	
Elachistocleis cesarii (Miranda-Ribeiro, 1920)*			
Myersiella microps (Duméril & Bibron, 1841)			
Stereocyclops parkeri (Wettstein, 1934)**			
Odontophrynidae			
Odontophrynus americanus (Duméril & Bibron, 1841)			
Proceratophrys appendiculata (Günther, 1873)	X		
Proceratophrys boiei (Wied-Neuwied, 1824)			
Proceratophrys izecksohni Dias, Amaro, Carvalho-e-Silva & Rodrigues, 2013*	X		
Proceratophrys mantiqueira Mângia, Santana, Cruz & Feio, 2014*			
Proceratophrys melanopogon (Miranda-Ribeiro, 1926)			
Proceratophrys schirchi (Miranda-Ribeiro, 1937)			
Proceratophrys tupinamba Prado & Pombal, 2008*	X		
Ranidae			
Lithobates catesbeianus (Shaw, 1802)			
GYMNOPHIONA			
Siphonopidae			
Mimosiphonops vermiculatus Taylor, 1968	X	DD	
Siphonops annulatus (Mikan, 1820)			
Siphonops hardyi Boulenger, 1888			
Typhlonectidae			
Chthonerpeton braestrupi Taylor, 1968*	?	DD	

Martins *et al.,* 2012; Telles *et al.,* 2012; Bittencourt-Silva & Silva, 2013). Pending resolution of the taxonomic problems regarding the name *Scinax x-signatus* and determination of the status of species of this complex occurring in the state of Rio de Janeiro, we add *Scinax* aff. *x-signatus* to the list.

Regarding the Gymnophiona, only one species, *Chthonerpeton braestrupi,* has been added herein to the previous list, raising to four the number of species in this group with records for the state of Rio de Janeiro. That caecilian species was originally described based on a single specimen (now presumably lost) with an imprecise provenance ("Brazil") (Taylor, 1968). Almeida-Gomes *et al.* (2014) recorded a specimen identified as *C. braestrupi* in a forest fragment in the municipality of Cachoeiras de Macacu, which thus became the second known example of that taxon. Rocha *et al.* (2004) did not include any species of *Chthonerpeton* in their list, but commented that a presumably undescribed species of that genus has been recorded at the municipality of Paracambi (some 100 km west of Cachoeiras de Macacu). More recently, Martins *et al.* (2012) reported *Chthonerpeton* sp. for the municipality of Iguaba Grande (some 70 km southeast of Cachoeiras de Macacu) and presumed it might be the same taxon as the one cited by Rocha *et al.* (2004). In both cases above, a careful examination of these specimens may reveal them to be *C. braestrupi* or other, possibly undescribed taxa. In any case, it is likely that more species of that genus will eventually be found to occur in the state of Rio de Janeiro.

Mott *et al.* (2016) recently reviewed the distribution range of *Siphonops paulensis* Boettger, 1892 and included a record from Teresópolis, state of Rio de Janeiro, in their range map, quoting Sawaya's (1937) revision of the genus *Siphonops* as its source. This could mean another new caecilian record for the state, as *S. paulensis* is not on the list of Rocha *et al.* (2004). However, Sawaya (1937) explicitly stated that all specimens of *Siphonops* that he examined from Teresópolis were from the species *S. annulatus.* He also mentioned that all of the *S. paulensis* individuals he examined (including, by implication, those of his proposed new "variety" *S. paulensis* var. *maculatus*) were old museum specimens that had been collected in the surroundings of São Paulo city. Thus, *Siphonops paulensis* must remain out of the amphibian list of Rio de Janeiro state. Mott *et al.* (2016) were likely misled by Dunn (1942) who erroneously stated that Sawaya (1937) had reported *S. paulensis* from Teresópolis.

Like the case mentioned above, we found other instances in which species not listed by Rocha *et al.* (2004) have been reported or suggested to occur in Rio de Janeiro by other authors. We investigated these potential new records and found that none of them were reliable. One of them concerns *Boana bischoffi* (Boulenger, 1887), whose range is given by Frost (2017) as "from Rio de Janeiro to Rio Grande do Sul", without citing sources. Nevertheless, according to Marcelino *et al.* (2009), who analyzed morphological variation of *B. bischoffi* across its geographic distribution range, this species does not extend northwards beyond the northern coast of São Paulo state. Thus, we opted for keeping this taxon off the list due to lack of solid evidence of its occurrence in the state of Rio de Janeiro.

There is also the case of *Phyllomedusa megacephala* (Miranda-Ribeiro, 1926), a species whose occurrence in Rio de Janeiro has been considered probable (Brandão, 2002). It was described (as *Bradymedusa megacephala*) based on a single specimen of uncertain provenance [given as "Rio de Janeiro?" by Miranda-Ribeiro (1926)]. After comparing the holotype of *P. megacephala* with other specimens collected more recently, Caramaschi (2006) concluded that the type did not come from Rio de Janeiro and that the species occurs only in the Espinhaço mountain range in the state of Minas Gerais. Therefore, we do not include this taxon on the list.

Finally, *Adenomera bokermanni* (Heyer, 1973) was reported by Almeida-Gomes *et al.* (2014) from the municipality of Cachoeiras de Macacu. However, according to Fouquet *et al.,* (2014) 'true' *A. bokermanni* has a relatively restricted distribution limited to coastal forests in the states of Paraná and northern Santa Catarina, in southern Brazil. They mention that many individuals of *Adenomera* from other localities that have been previously attributed to *A. bokermanni* (including most of the original type series) are in fact referable to the recently described *A. thomei.* This latter species, originally described from a lowland site in the state of Espírito Santo (Almeida & Angulo, 2006), was found by Fouquet *et al.* (2014) to have a relatively broad distribution, encompassing much of the states of Espírito Santo and Rio de Janeiro, as well as southeast São Paulo and southern Minas Gerais. The occurrence of *A. thomei* in the state of Rio de Janeiro has also been reported by Martins *et al.* (2014), who recorded the species in the municipality of Saquarema. Thus, we believe that the species reported by Almeida-Gomes *et al.* (2014) was in fact *A. thomei* and thus we do not add *A. bokermanni* to the list.

Our addition or removal of some species from the previous list of Rocha *et al.* (2004) result from taxonomic revisions (synonymizations/revalidations), re-evaluations of their occurrence records, or nomenclatural changes to the species' epithets that have been published since 2004. We list and comment those cases below.

Family Aromobatidae

Allobates carioca (Bokermann, 1967) was synonymized with *Allobates olfersioides* by Verdade & Rodrigues (2007), being thus excluded from the list.

Family Brachycephalidae

Brachycephalus bufonoides and *B. garbeanus* were ressurrected from synonymy with *B. ephippium* and validated as full species (Pombal, 2010).

The species listed as "*Eleutherodactylus* gr. *lacteus* (Miranda-Ribeiro, 1923)" by Rocha *et al.* (2004) is probably meant to be *Ischnocnema lactea*. This species is prob-

lematic, however, and needs to be reviewed in order to define its actual status and geographic distribution (T. Silva-Soares, *pers. comm.*). As *I. lactea* was described from a site in the state of São Paulo and attribution of this name to other populations at present is considered problematic, we exclude this species from the list pending resolution of its taxonomic status.

Ischnocnema nigriventris (Lutz, 1925) was originally described based on specimens from "Serra de Cubatão" (state of São Paulo) and "Itatiaia" (state of Rio de Janeiro) (Lutz, 1925). Presumably based on the latter record, the species was included in the list of Rocha *et al.* (2004). Since then, Berneck *et al.* (2013) have reviewed the species based on the existing syntypes and on newly collected material, concluding that *I. nigriventris* occurs only in the state of São Paulo. Berneck *et al.* (2013) argue that the record from Itatiaia was based on a specimen that is presently lost, and apparently not conspecific with the remaining syntypes (as previously suggested by Heyer, 1985). Thus, we herein remove this species from the list of amphibians occurring in the state of Rio de Janeiro.

Family Bufonidae

Baldissera *et al.* (2004) reviewed the *Bufo crucifer* (now *Rhinella crucifer*) group and resurrected *Bufo ornatus* Spix, 1824 (now *Rhinella ornata*). According to that work, all records of *R. crucifer* from the state of Rio de Janeiro should be attributed to *R. ornata*. However, *R. crucifer* (*sensu* Baldissera *et al.,* 2004) was subsequently reported from different localities in Rio de Janeiro (Marques *et al.,* 2006; Silveira *et al.,* 2009; Almeida-Gomes *et al.,* 2010), confirming the presence of both species in the state. Additionally, Silveira *et al.* (2009) presented the first records of another member of the *R. crucifer* complex, *R. pombali* (Baldissera, Caramaschi & Haddad, 2004), for the state of Rio de Janeiro. However, recent molecular studies have found no support for the validity of *R. pombali* (Thomé *et al.,* 2010, 2012), and it was concluded that this taxon was based on *R. crucifer* × *R. ornata* hybrids (Thomé *et al.,* 2012). As *R. pombali* is currently an invalid taxon, it is not included herein in the list.

The species listed in Rocha *et al.* (2004) as "*Bufo* gr. *margaritifer* Laurenti, 1768" is, most probably, *Rhinella hoogmoedi* Caramaschi & Pombal, 2006, which is currently the only species of the *R. margaritifera* group known to occur in the state (Frost, 2017). Therefore, we substituted the former name by the latter.

Family Cycloramphidae

Lima *et al.* (2010) considered Heyer's (1983) record of *Cycloramphus lutzorum* Heyer, 1983 for the state of Rio de Janeiro as dubious, and implicitly restricted the species (which they rediscovered after nearly two decades without records) to the states of São Paulo and Paraná. Therefore, we remove *C. lutzorum* from the list of amphibians of Rio de Janeiro.

Family Hemiphractidae

Fritziana ulei was resurrected from synonymy with *Fritziana fissilis* by Folly *et al.* (2014).

Family Hylidae

Aplastodiscus callipygius (Cruz & Peixoto, 1985) was synonymized with *A. albosignatus* (a species absent from the list of Rocha *et al.,* 2004) by Berneck *et al.* (2016). Thus, we substituted the former name by the latter in our list.

Bokermannohyla clepsydra (Lutz, 1925) is known only from its type locality in the state of São Paulo (Frost, 2017) and is thus herein removed from the list.

Scinax dolloi (Werner, 1903) is a problematic taxon, as this name is not currently associated to any known frog population (Frost, 2017). Nevertheless, Caramaschi *et al.* (2013) concluded that its type locality (not given in the original description of Werner, 1903) is Maringá, in the Municipality of Itatiaia, and thus we included this species on the list.

Family Hylodidae

Crossodactylus boulengeri was resurrected from synonymy with *C. dispar* (Pimenta *et al.,* 2014).

Family Leptodactylidae

The species formerly known as *Leptodactylus ocellatus* (Linnaeus, 1758) is currently called *L. latrans*. According to Lavilla *et al.* (2010), the name *Rana ocellata* Linnaeus, 1758 does not represent a leptodactylid, but the Jamaican hylid *Osteopilus brunneus* (Gosse, 1851), and the oldest available name for the taxon then known as *Leptodactylus ocellatus* is *Rana latrans* Steffen, 1815.

Nascimento *et al.* (2006) has shown that the correct name of the species to which the name *Physalaemus fuscomaculatus* (Steindachner, 1864) used to be formerly applied is *P. marmoratus*. Currently, *Eupemphix fuscomaculatus* Steindachner, 1864 is considered a junior synonym of *Physalaemus biligonigerus* Cope, 1861 (see Kolenc *et al.,* 2011), a species that does not occur in Rio de Janeiro (Frost, 2017).

Langone *et al.* (2015) reviewed the distribution range of *Pseudopaludicola falcipes* (Hensel, 1867) and concluded that this species is restricted to northern Argentina, Uruguay, and the extreme south of Brazil, with all previous Brazilian records outside that range (including those from Rio de Janeiro state) representing misidentifications. Therefore, we remove *P. falcipes* from the list of amphibians of Rio de Janeiro, observing that the identity of the *Pseudopaludicola* species occurring in the state is presently unknown, which we acknowledge by listing it as *Pseudopaludicola* sp.

Family Microhylidae

Peloso *et al.* (2014) synonymized the genus *Syncope* Walker, 1973 with *Chiasmocleis* Méhely, 1904, thus creating an instance of homonymy between *Chiasmocleis carvalhoi* (Nelson, 1975) (formerly in the genus *Syncope*) and *Chiasmocleis carvalhoi* Cruz, Caramaschi & Izecksohn, 1997. To solve the problem Peloso *et al.* (2014) renamed the latter species (*i.e.,* the junior homonym) as *C. lacrimae.*

Silveira *et al.* (2010) reported the first record of *Elachistocleis ovalis* (Schneider, 1799), and also of the genus *Elachistocleis* Parker, 1927, for the state of Rio de Janeiro, based on a specimen from the municipality of Itaperuna. Caramaschi (2010) considered *E. ovalis* a *nomen dubium,* and identified all specimens of *Elachistocleis* examined by him from the state of Rio de Janeiro (including the specimen reported by Silveira *et al.,* 2010) as *E. cesarii,* a species that had just been revalidated by Toledo *et al.* (2010) for specimens from the state of São Paulo. Thus, the species of *Elachistocleis* occurring in Rio de Janeiro is currently referred to *E. cesarii*.

The records of *Stereocyclops incrassatus* Cope, 1870 in the state of Rio de Janeiro are currently considered to represent *S. parkeri* (see Frost, 2017). Previously in the synonymy of *S. incrassatus* (see Carvalho, 1948), *S. parkeri* was treated as a valid taxon by Bokermann (1966) without comment, and this has been followed by most subsequent authors since then (*e.g.,* Izecksohn & Carvalho-e-Silva, 2001; Haddad *et al.,* 2013).

Conservation remarks

Fifty-four amphibian species are presently considered endemic of the state of Rio de Janeiro, corresponding to 27% of the state's amphibian richness (Table 1). These include *Ischnocnema guentheri* (*sensu stricto*), which was recently considered a microendemic species and is now restricted to the municipality of Rio de Janeiro, with records from elsewhere representing *I. henselii* and four undescribed cryptic species (Gehara *et al.,* 2013). Also, 16 species (8% of the state's amphibians) are currently considered to be under some level of threat (excluding those categorized as DD) at either the global or national level, or both (Table 1). Some of these, and even a few that are classified as DD, have not been recorded for decades and are possibly extinct, as is the case of *Aplastodiscus musicus, Holoaden bradei* and *Thoropa petropolitana*. Although conservation strategies tend to prioritize threatened species, IUCN has recommended to give similar attention to the species considered as "data deficient" (DD), though this is still not being properly done (Pimenta *et al.* 2005; Siqueira *et al.* 2013). Species labeled as "DD" currently represent 19% (N = 38) of the amphibian fauna of Rio de Janeiro (Table 1) and, considering that the threat status of several recently described species have not yet been evaluated by the IUCN (2016), this number tends to increase.

Exotic invasive species constitute the second greatest threat to biodiversity, after habitat destruction (Rocha *et al.,* 2011). In the state of Rio de Janeiro, the American bullfrog, *Lithobates catesbeianus,* remains the only known exotic amphibian occurring in natural habitats. Since 2004, there have been a number of new records of occurrence of the American bullfrog in different parts of the state (Salles *et al.,* 2009; Almeida-Gomes *et al.,* 2014; Pontes *et al.,* 2015). This anuran, native to the eastern and central regions of the United States, is believed to be expanding its distribution in the state of Rio de Janeiro (Rocha *et al.,* 2004; van Sluys *et al.,* 2009), which points to the necessity of monitoring of its populations and of management programs for removal of individuals from natural habitats.

Scinax nasicus, a species typical of open habitats such as Cerrados, has been recently reported from the municipality of Porto Real, representing the easternmost record of the species and the one closest to the coast (Pederassi *et al.,* 2015). The finding of this species in an area that is currently practically devoid of forest remnants suggests that deforestation may be favoring the colonization and/or range expansion of open-habitat anuran species in the state, as previously reported for the viperid snake *Crotalus durissus* Linnaeus, 1758 (Bastos *et al.,* 2005).

Recently, a total of 1,080 species of amphibians were reported to occur in Brazil (Segalla *et al.,* 2016) and 543 species were reported for the Atlantic Forest biome (Haddad *et al.,* 2013). Thus, the state of Rio de Janeiro, in spite of its relatively small territorial extension, contains approximately 19% of the amphibian species known to occur in Brazil and nearly 40% of the Atlantic Forest amphibian species. Nevertheless, the list reported herein for Rio de Janeiro is likely still far from exhaustive, judging by the numerous recent reports of undescribed species from throughout the state, including members of genera such as *Brachycephalus* (Siqueira *et al.,* 2011a, b, 2013), *Ischnocnema* (Siqueira *et al.,* 2011b; Gehara *et al.,* 2013), *Euparkerella* (Fusinatto *et al.,* 2013), *Adenomera* (Fouquet *et al.,* 2014), *Fritziana* (Siqueira *et al.,* 2011b; Castroviejo-Fisher *et al.,* 2015), *Aplastodiscus* (Berneck *et al.,* 2016), and *Scinax* (Bittencourt-Silva & Silva, 2013). This indicates that the current amphibian richness recorded for the state is still an underestimate, and is likely to increase in the years to come following the intensification of taxonomic studies and of local herpetofaunal surveys. The state of Rio de Janeiro thus constitutes an important reservoir of amphibian (and, especially, anuran) biodiversity in the Atlantic Forest biome and of Brazil, as a whole.

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REFERENCES

Abrunhosa, P.A.; Wogel, H. & Pombal Jr., J.P. 2006. Anuran temporal occupancy in a temporary pond from the Atlantic rain forest, south-eastern Brazil. *Herpetological Journal,* 16: 115-122.

Almeida, A.P. & Angulo, A. 2006. A new species of *Leptodactylus* (Anura: Leptodactylidae) from the state of Espírito Santo, Brazil, with remarks on the systematics of associated populations. *Zootaxa,* 1334: 1-25.

Almeida-Gomes, M.; Almeida-Santos M.; Araújo P.G.; Borges Jr., V.N.T.; Vrcibradic, D.; Siqueira, C.C.; Ariani, C.V.; Dias, A.S.; Souza, V.V.; Pinto, R.R.; van Sluys, M. & Rocha, C.F.D. 2010. Anurofauna of an Atlantic Rainforest fragment and its surroundings in northern Rio de Janeiro State, Brazil. *Brazilian Journal of Biology,* 70: 871-877.

Almeida-Gomes, M.; Siqueira, C.C.; Borges-Júnior, V.N.T.; Vrcibradic, D.; Fusinatto, L.A. & Rocha, C.F.D. 2014. Herpetofauna of the Reserva Ecológica de Guapiaçu (REGUA) and its surrounding areas, in the state of Rio de Janeiro, Brazil. *Biota Neotropica,* 14(3): 1-15. DOI

Almeida-Gomes, M.; Vrcibradic, D.; Siqueira, C.C.; Kiefer, M.C.; Klaion, T.; Santos, P.A.; Nascimento, D.; Ariani, C.V.; Borges Jr., V.N.T.; Freitas-Filho, R.F.; van Sluys, M. & Rocha, C.F.D. 2008. Herpetofauna of an Atlantic Rainforest area (Morro São João) in Rio de Janeiro State, Brazil. *Anais da Academia Brasileira de Ciências,* 80: 291-300.

Baldissera Jr., F.A.; Caramaschi, U. & Haddad, C.F.B. 2004. Review of the *Bufo crucifer* species group, with descriptions of two new related species (Amphibia, Anura, Bufonidae). *Arquivos do Museu Nacional,* 62: 255-282.

Bastos, E.G.M.; Araujo, A.F.B. & Silva, H.R. 2005. Records of the rattlesnake *Crotalus durissus terrificus* (Laurenti) (Serpentes, Viperidae) in the State of Rio de Janeiro, Brazil: a possible case of invasion facilitated by deforestation. *Revista Brasileira de Zoologia,* 22: 812-815.

Bergallo, H.G.; Uzêda, M.C.; Fidalgo, E.C.C.; Alves, M.A.S.; Rocha, C.F.D.; van Sluys, M.; Correa e Castro, T.C.; Bebianno, M.C.; Santos, M.A. & Cozzolino, A.C.R. 2009. Conservação da biodiversidade da Mata Atlântica no estado do Rio de Janeiro: uma nova abordagem. *In:* Bergallo, H.G.; Fidalgo, E.C.C.; Rocha, C.F.D.; Uzêda, M.C.; Bebianno, M.C.; Alves, M.A.S.; van Sluys, M.; Santos, M.A.; Correa e Castro, T.C. & Cozzolino, A.C.R. (Eds.). *Estratégias e ações para a conservação da biodiversidade no Estado do Rio de Janeiro.* Rio de Janeiro, Instituto Biomas. p. 23-32.

Berneck, B.M.; Haddad, C.F.B.; Lyra, M.L.; Cruz, C.A.G. & Faivovich, J. 2016. The Green Clade grows: A phylogenetic analysis of *Aplastodiscus* (Anura; Hylidae). *Molecular Phylogenetics and Evolution,* 97: 213-223.

Berneck, B.M.; Targino, M. & Garcia, P.C.A. 2013. Rediscovery and re-description of *Ischnocnema nigriventris* (Lutz, 1925) (Anura: Terrarana: Brachycephalidae). *Zootaxa,* 3692: 131-142.

Bittencourt-Silva, G. & Silva, H.R. 2013. Insular anurans (Amphibia: Anura) of the coast of Rio de Janeiro, southeast, Brazil. *Check List,* 9: 225-234.

Bokermann, W.C.A. 1966. *Lista anotada das localidades tipo de anfíbios brasileiros.* Universidade Rural, São Paulo.

Brandão, R.A. 2002. A new species of *Phyllomedusa* Wagler, 1830 (Anura: Hylidae) from central Brazil. *Journal of Herpetology,* 36: 571-578.

Canedo, C. & Pombal, J.P., Jr. 2007. Two new species of torrent frog of the genus *Hylodes* (Anura, Hylodidae) with nuptial thumb tubercles. *Herpetologica,* 63: 224-235.

Caram, J.; Luna-Dias, C.; Gomes, M.R. & Carvalho-e-Silva, S.P. 2011. Distribution extension of *Scinax hiemalis* (Haddad & Pombal, 1987) and new state record from Rio de Janeiro, southeastern Brazil (Amphibia: Anura: Hylidae). *Herpetology Notes,* 4: 153-154.

Caramaschi, U. 2006. Redefinição do grupo de *Phyllomedusa hypochondrialis,* com redescrição de *P. megacephala* (Miranda-Ribeiro, 1926), revalidação de *P. azurea* Cope, 1862 e descrição de uma nova espécie (Amphibia, Anura, Hylidae). *Arquivos do Museu Nacional,* 64: 159-179.

Caramaschi, U. 2010. Notes on the taxonomic status of *Elachistocleis ovalis* (Schneider, 1799) and description of five new species of *Elachistocleis* Parker, 1927 (Amphibia, Anura, Microhylidae). *Boletim do Museu Nacional. Nova Série, Zoologia,* 527: 1-30.

Caramaschi, U. & Pombal Jr., J.P. 2006. A new species of *Rhinella* Fitzinger, 1826 from the Atlantic Rain Forest, eastern Brazil (Amphibia, Anura, Bufonidae). *Papéis Avulsos de Zoologia,* 46: 251-259.

Caramaschi, U.; Nunes, I.; Nascimento, L.B. & de Carvalho Jr., R.R. 2013. The type locality of *Scinax dolloi* (Werner, 1903) (Anura, Hylidae). *Zootaxa,* 3691: 299-300.

Carvalho, A.L. 1948. Sobre a validez de *Sterocyclops incrassatus* Cope, 1871, e *Hypopachus mülleri* (Boettger, 1884). *Boletim do Museu Nacional. Nova Série, Zoologia,* 84: 1-13.

Carvalho-e-Silva, A.M.P.T. & Carvalho-e-Silva, S.P. 2005. New species of the *Hyla albofrenata* group, from the States of Rio de Janeiro and São Paulo, Brazil (Anura, Hylidae). *Journal of Herpetology,* 39: 73-81.

Carvalho-e-Silva, A.M.P.T.; Mongin, M.M.; Izecksohn, E. & Carvalho-e-Silva, S.P. 2010. A new species of *Dendrophryniscus* Jiménez-de-la-Espada from the Parque Nacional da Serra dos Órgãos, Teresópolis, State of Rio de Janeiro, Brazil (Amphibia, Anura, Bufonidae). *Zootaxa,* 2632: 46-52.

Carvalho-e-Silva, A.M.P.T.; Silva, G.R. & Carvalho-e-Silva, S.P. 2008. Anuros da Reserva Rio das Pedras, Mangaratiba, RJ, Brasil. *Biota Neotropica,* 8(1): 199-209.

Carvalho-e-Silva, A.M.P.T.; Silva, G.R. & Carvalho-e-Silva, S.P. 2009. A new species of *Phasmahyla* Cruz, 1990 from the Atlantic Forest in the state of Rio de Janeiro, Brazil (Amphibia, Hylidae, Phyllomedusinae). *Zootaxa,* 2120: 15-26.

Castroviejo-Fisher, S.; Padial, J.M.; de la Riva, I.; Pombal Jr., J.P.; Silva, H.R.; Rojas-Runjaic, F.J.M.; Medina-Méndez, E. & Frost, D.R. 2015. Phylogenetic systematics of egg-brooding frogs (Anura: Hemiphractidae) and the evolution of direct development. *Zootaxa,* 4004: 1-75.

Cruz, C.A.G. & Feio, R.N. 2007. Endemismos em anfíbios em áreas de altitude na Mata Atlântica no sudeste do Brasil. *In:* Nascimento, L.B. & Oliveira, M.E. (Eds.). *Herpetologia no Brasil II.* Belo Horizonte, Sociedade Brasileira de Herpetologia. p. 117-126.

Dias, P.H.S.; Amaro, R.C.; Carvalho-e-Silva, A.M.P.T. & Rodrigues, M.T. 2013. Two new species of *Proceratophrys* Miranda-Ribeiro, 1920 (Anura; Odontophrynidae) from the Atlantic Forest, with taxonomic remarks on the genus. *Zootaxa,* 3682: 277-304.

Duellman, W.E.; Marion, A.B. & Hedges, S.B. 2016. Phylogenetics, classification, and biogeography of the treefrogs (Amphibia: Anura: Arboranae). *Zootaxa,* 4104: 1-109.

Dunn, E.R. 1942. The American caecilians. *Bulletin of the Museum of Comparative Zoology,* 91: 437-540.

Faivovich, J.; Haddad, C.F.B.; Garcia, P.C.A.; Frost, D.R.; Campbell, J.A. & Wheeler, W.C. 2005. Systematic review of the frog family Hylidae, with special reference to Hylinae: phylogenetic analysis and taxonomic revision. *Bulletin of the American Museum of Natural History,* 294: 1-240.

Folly, M.; Hepp, F.S.F.S.; Carvalho-e-Silva, S.P. & Duellman, W.E. 2014. Taxonomic status and redescription of *Flectonotus ulei* (Anura:

Hemiphractidae), with a key for the species of *Fritziana*. *Zoologia,* 31: 393-399.

Fouquet, A.; Cassini, C.S.; Haddad, C.F.B.; Pech, N. & Rodrigues, M.T. 2014. Species delimitation, patterns of diversification and historical biogeography of the Neotropical frog genus *Adenomera* (Anura, Leptodactylidae). *Journal of Biogeography,* 41: 855-870.

Frost, D.R. 2017. *Amphibian Species of the World: an Online Reference. Version 6.0.* Available at http://research.amnh.org/herpetology/amphibia/index.html. Accessed in: 10/04/2017.

Frost, D.R.; Grant, T.; Haddad, C.F.B.; Faivovich, J.; Bain, R.; Haas, A.; de Sá, R.O.; Channing, A.; Wilkinson, M.; Donnellan, S.C.; Raxworthy, C.J.; Campbell, J.A.; Blotto, B.L.; Moler, P.; Drewes, R.C.; Nussbaum, R.A.; Lynch, J.D.; Green, D. & Wheeler, W.C. 2006. The amphibian tree of life. *Bulletin of the American Museum of Natural History,* 297: 1-370.

Fusinatto, L.A.; Alexandrino, J.; Haddad, C.F.B.; Brunes, T.O.; Rocha, C.F.D. & Sequeira, F. 2013. Cryptic genetic diversity is paramount in small-bodied amphibians of the genus *Euparkerella* (Anura: Craugastoridae) endemic to the Brazilian Atlantic Forest. *PLoS One,* 8(11): e79504.

Gehara, M.; Canedo, C.; Haddad, C.F.B. & Vences, M. 2013. From widespread to microendemic: molecular and acoustic analyses show that *Ischnocnema guentheri* (Amphibia: Brachycephalidae) is endemic to Rio de Janeiro, Brazil. *Conservation Genetics,* 14. DOI

Giaretta, A.A. & Sawaya, R.J. 1998. Second species of *Psyllophryne* (Anura: Brachycephalidae). *Copeia,* 1998: 985-987.

Grant, T.; Frost, D.R.; Caldwell, J.P.; Gagliardo, R.; Haddad, C.F.B.; Kok, P.J.R.; Means, D.B.; Noonan, B.P.; Schargel, W.E. & Wheeler, W.C. 2006. Phylogenetic systematics of dart-poison frogs and their relatives (Amphibia: Athesphatanura: Dendrobatidae). *Bulletin of the American Museum of Natural History,* 299: 1-262.

Guayasamin, J.M.; Castroviejo-Fisher, S.; Trueb, L.; Ayarzagüena, J.; Rada, M. & Vilà, C. 2009. Phylogenetic systematics of Glassfrogs (Amphibia: Centrolenidae) and their sister taxon *Allophryne ruthveni*. *Zootaxa,* 2100: 1-97.

Haddad, C.F.B.; Toledo, L.F.; Prado, C.P.A.; Loebmann, D.; Gasparini, L. & Sazima, I. 2013. *Guia dos anfíbios da Mata Atlantica – Diversidade e Biologia.* São Paulo, Anolis Books.

Hedges, S.B.; Duellman, W.E. & Heinicke, M.P. 2008. New world direct-developing frogs (Anura: Terrarana): Molecular phylogeny, classification, biogeography, and conservation. *Zootaxa,* 1737: 1-182.

Hepp, F.; Carvalho-e-Silva, S.P.; Carvalho-e-Silva, A.T. & Folly, M. 2015. A fifth species of the genus *Euparkerella* (Griffths, 1959), the advertisement calls of *E. robusta* Izecksohn, 1988 and *E. tridactyla* Izecksohn, 1988, and a key for the *Euparkerella* species (Anura: Brachycephaloidea: Craugastoridae). *Zootaxa,* 3973: 251-270.

Heyer, W.R. 1983. Variation and systematics of frogs of the genus *Cycloramphus* (Amphibia, Leptodactylidae). *Arquivos de Zoologia,* 30: 235-339.

Heyer, W.R. 1985. New species of frogs from Boracéia, São Paulo, Brazil. *Proceedings of the Biological Society of Washington,* 98: 675-671.

IUCN – International Union for Conservation of Nature. 2016. *The IUCN Red List of Threatened Species. Version 2016.2*. Available at: www.iucnredlist.org. Accessed in: 04/09/2016.

Izecksohn, E. & Carvalho-e-Silva, S.P. 2001 *Anfíbios do Município do Rio de Janeiro.* Rio de Janeiro, UFRJ.

Jenkins, C.N. & Pimm, S.L. 2006. Definindo prioridades de conservação em um hotspot de biodiversidade global. *In:* Rocha, C.F.D.; Bergallo, H.G.; van Sluys, M. & Alves, M.A.S. (Eds.). *Biologia da conservação: essências.* São Carlos, RiMa. p. 41-52.

Kolenc, F.; Baldo, D.; Borteiro, C.; Marango, F.; Ferraro, D.P. & Faivovich, J. 2011. The identity of *Eupemphix fuscomaculatus* Steindachner, 1864 (Amphibia: Anura). *Copeia,* 2011: 513-522.

Langone, J.A.; Lavilla, E.O.; de Sá, R.O. & Cardozo, D. 2015. Comments on the type locality, type series, and geographic distribution of *Pseudopaludicola falcipes* (Hensel, 1867) (Amphibia, Anura). *Zootaxa,* 4058: 145-150.

Lavilla, E.O.; Langone, J.A.; Caramaschi, U.; Heyer, W.R. & de Sá, R.O. 2010. The identification of *Rana ocellata* Linnaeus, 1758. Nomenclatural impact on the species currently known as *Leptodactylus ocellatus* (Leptodactylidae) and *Osteopilus brunneus* (Gosse, 1851) (Hylidae). *Zootaxa,* 2346: 1-16.

Lima, A.M.X.; Garey, M.V.; Noleto, R.B. & Verdade, V.K. 2010. Natural history of the Lutz's Frog *Cycloramphus lutzorum* Heyer, 1983 (Anura: Cycloramphidae) in the Brazilian Atlantic Forest: description of the advertisement call, tadpole, and karyotype. *Journal of Herpetology,* 44: 360-371.

Lutz, A. 1925. Batraciens du Brésil. *Comptes Rendus et Mémoires Hebdomadaires des Séances de la Société de Biologie et des ses Filiales, Paris,* 93: 137-139.

Marcelino, V.R.; Haddad, C.F.B. & Alexandrino, J. 2009. Geographic distribution and morphological variation of striped and nonstriped populations of the Brazilian Atlantic Forest treefrog *Hypsiboas bischoffi* (Anura: Hylidae). *Journal of Herpetology,* 43: 351-361.

Marques, F.A.; Annunziata, B.B. & Carvalho-e-Silva, A.M.P. 2006. Geographic distribution. *Bufo crucifer. Herpetological Review,* 37: 98.

Martins, A.R.; Bruno, S.F. & Navegantes, A.Q. 2012. Herpetofauna of Núcleo Experimental de Iguaba Grande, Rio de Janeiro state, Brazil. *Brazilian Journal of Biology,* 72: 553-562.

Martins, A.R.; Pontes, R.C.; Mattedi, C.; Fratani, J.; Fonseca, R.A.M.; Ramos, L.O. & Brandão, A.L. 2014. Anuran community of a coastal Atlantic Forest fragment in the state of Rio de Janeiro, Southeastern Brazil. *Salamandra,* 50: 27-39.

Miranda-Ribeiro, A. 1926. Notas para servirem ao estudo dos Gymnobatrachios (Anura) Brasileiros. *Arquivos do Museu Nacional,* 27: 1-227.

Mittermeier, R.A.; Gil, R.P.; Hoffman, M.; Pilgrim, J.; Brooks, T.; Mittermeier, C.G.; Lamoreux, J. & Fonseca, G.A.B. 2005. *Hotspots revisited: earth's biologically richest and most endangered terrestrial ecoregions.* Chicago, University of Chicago Press.

MMA – Ministério do Meio Ambiente. 2014. *Official Brazilian National List of Species of the Fauna Threatened with Extinction*. Ministério do Meio Ambiente e Recursos Renováveis – MMA, Portaria No. 444, 17/12/2014.

Mott, T.; Correia, L.L.; de Almeida, J.P.F.A.; Lisboa, B.S. & Guarnieri, M.C. 2016. On the distribution of *Siphonops paulensis* Boettger, 1892 (Gymnophiona: Siphonopidae): four new Brazilian state records. *Check List,* 12(3): 1884. DOI

Nascimento, J.L. & Campos, I.B. 2011. *Atlas da fauna brasileira ameaçada de extinção em unidades de conservação federais.* Brasília, ICMBIO.

Nascimento, L.B.; Pimenta, B.V.S.; Cruz, C.A.G. & Caramaschi, U. 2006. Taxonomic status of *Gomphobates marmoratus* Reinhardt and Lutken, 1862 "1861" and *Euphemphix fuscomaculatus* Steindachner, 1864 (Amphibia, Anura, Leptodactylidae). *South American Journal of Herpetology,* 1: 166-174.

Nunes, I.; Kwet, A. & Pombal Jr., J.P. 2012. Taxonomic revision of the *Scinax alter* species complex (Anura: Hylidae). *Copeia,* 2012: 554-569.

Padial, J.M.; Grant, T. & Frost, D.R. 2014. Molecular systematics of terraranas (Anura: Brachycephaloidea) with an assessment of the effects of alignment and optimality criteria. *Zootaxa,* 3825: 1-132.

Pederassi, J.; Lima, M.S.C.S. & Souza, C.A.S. 2015. Geographic distribution *Scinax nasicus* (Lesser Snouted Treefrog). *Herpetological Review,* 46: 214.

Peloso, P.L.V.; Sturaro, M.J.; Forlani, M.C.; Gaucher, P.; Motta, A.P. & Wheeler, W.C. 2014. Phylogeny, taxonomic revision, and character evolution of the genera *Chiasmocleis* and *Syncope* (Anura, Microhylidae) in Amazonia, with descriptions of three new species. *Bulletin of the American Museum of Natural History,* 386: 1-96.

Pimenta, B.V.S.; Cruz, C.G.A. & Caramaschi, U. 2014. Taxonomic review of the species complex of *Crossodactylus dispar* A. Lutz, 1925 (Anura, Hylodidae). *Arquivos de Zoologia,* 45: 1-33.

Pimenta, B.V.S.; Haddad, C.F.B.; Nascimento, L.B.; Cruz, C.A.G. & Pombal Jr., J.P. 2005. Comment on "Status and trends of amphibian declines and extinctions worldwide". *Science,* 309: 1999.

Pimm, S.L.; Jenkins, C.N.; Joppa, L.N.; Roberts, D.L. & Russel, G.J. 2010. How many endangered species remain to be discovered in Brazil? *Natureza & Conservação,* 8: 71-77.

Pombal Jr., J.P. 2010. A posição taxonômica das "variedades" de *Brachycephalus ephippium* (Spix, 1824) descritas por Miranda-Ribeiro, 1920 (Amphibia, Anura, Brachycephalidae). *Boletim do Museu Nacional. Nova Série, Zoologia,* 526: 1-12.

Pombal Jr., J.P. & Izecksohn, E. 2011. Uma nova espécie de *Brachycephalus* (Anura, Brachycephalidae) do estado do Rio de Janeiro. *Papéis Avulsos de Zoologia,* 51: 443-451.

Pombal Jr., J.P.; Haddad, C.F.B. & Kasahara, S. 1995. A new species of *Scinax* (Anura: Hylidae) from southeastern Brazil, with comments on the genus. *Journal of Herpetology,* 29: 1-6.

Pombal Jr., J.P.; Siqueira C.C.; Dorigo T.A.; Vrcibradic D. & Rocha, C.F.D. 2008. A third species of the rare frog genus *Holoaden* (Terrarana, Strabomantidae) from a montane rainforest area of southeastern Brazil. *Zootaxa,* 1938: 61-68.

Pontes, J.A.L.; Pontes, R.C.; Rocha, R.F.; Lindenberg, P.M.; Silva, K.P.; Santos, W.A.; Lemos, N.A.; Hassan, P.G.A.; Alves, A.O.; Lopes, L.F.B.A.; Perro, L.C.T.; Boldrini, A.P.; Nunes, E.C.F.; Costa, L.F.; Kisling, R.W. & Rocha, C.F.D. 2015. Unidades de conservação na Cidade do Rio de Janeiro: *Hotspots* da herpetofauna carioca. *In:* Pontes, J.A.L. (Org.). *Biodiversidade carioca: segredos revelados.* Rio de Janeiro, Technical Books. p. 176-194.

Prado, G.M. & Pombal Jr., J.P. 2008. Espécies de *Proceratophrys* Miranda-Ribeiro, 1920 com apêndices palpebrais (Anura; Cycloramphidae). *Arquivos de Zoologia,* 39: 1-85.

Ribeiro, M.C.; Metzger, J.P.; Martensen, A.C.; Ponzoni, F.J. & Hirota, M.M. 2009. The Brazilian Atlantic Forest: How much is left, and how is the remaining forest distributed? Implication for conservation. *Biological Conservation,* 142: 1144-1156.

Rocha, C.F.D.; Bergallo, H.G. & Mazzoni, R. 2011. Invasive vertebrates in Brazil. *In:* Pimentel, D. (Ed.). *Biological invasions: economic and environmental costs of alien plant, animal and microbe species.* New York, Taylor and Francis. p. 53-103.

Rocha, C.F.D.; Bergallo, H.G.; Alves, M.A.S. & van Sluys, M. 2005. Endemic and threatened tetrapods in the restingas of the biodiversity corridors of Serra do Mar and of the central of Mata Atlântica in eastern Brazil. *Brazilian Journal of Biology,* 65: 159-168.

Rocha, C.F.D.; Bergallo, H.G.; Pombal Jr., J.P.; Geise, L.; van Sluys, M.; Fernandes, R. & Caramaschi, U. 2004. Fauna de anfíbios, répteis e mamíferos do estado do Rio de Janeiro, sudeste do Brasil. *Publicações Avulsas do Museu Nacional,* 104: 1-24.

Salles, R.O.L.; Weber, L.N. & Silva-Soares, T. 2009. Amphibia, Anura, Parque Natural Municipal da Taquara, Municipality of Duque de Caxias, state of Rio de Janeiro, southeastern Brazil. *Check List,* 5: 840-854.

Sawaya, P. 1937. Sobre o genero *Siphonops* Wagler 1828 – Amphibia – Apoda – com descripção de duas variedades novas: *S. annulatus* (Mikan) var. *marmoratus* e *S. paulensis* Boettg. var. *maculatus. Boletins da Faculdade de Filosofia, Ciências e Letras, Universidade de São Paulo, Zoologia,* 1: 225-263.

Segalla, M.V.; Caramaschi, U.; Cruz, C.A.G.; Grant, T.; Haddad, C.F.B.; Garcia, P.C.A.; Berneck, B.V.M. & Langone, J.A. 2016. Brazilian amphibians: list of species. *Herpetologia Brasileira,* 5: 34-46.

Silva, H.R. & Alves-Silva, R. 2008. New coastal and insular species of the bromeligenous *Scinax perpusillus* group, from the State of Rio de Janeiro, Brazil (Anura, Hylidae). *Zootaxa,* 1914: 34-44.

Silva, H.R. & Alves-Silva, R. 2011. A new bromeligenous species of the *Scinax perpusillus* group from the hills of the state of Rio de Janeiro, Brazil (Anura, Hylidae). *Zootaxa,* 3043: 54-68.

Silva, H.R. & Ouvernay, D. 2012. A new species of stream-dwelling frog of the genus *Cycloramphus* (Anura, Cycloramphidae) from the state of Rio de Janeiro, Brazil. *Zootaxa,* 3407: 49-60.

Silva, H.R.; Carvalho, A.L.G. & Bittencourt-Silva, G.B. 2008. Frogs of Marambaia: a naturally isolated Restinga and Atlantic Forest remnant of southeastern Brazil. *Biota Neotropica,* 8(4): 167-174.

Silva-Soares, T.; Ferreira, R.B. & Costa, P.N. 2009. Geographic Distribution. *Ischnocnema oea. Herpetological Review,* 40: 108-109.

Silva-Soares, T.; Hepp, F.; Costa, P.N.; Luna-Dias, C. & Gomes, M.R. 2010. Anfíbios anuros da RPPN Campo Escoteiro Geraldo Hugo Nunes, município de Guapimirim, Rio de Janeiro, sudeste do Brasil. *Biota Neotropica,* 10(2): 225-233.

Silveira, A.L.; Salles, R.D.O.L. & Pontes, R.C. 2009. Primeiro registro de *Rhinella pombali* e novos registros de *R. crucifer* e *R. ornata* no estado do Rio de Janeiro (Amphibia, Anura). *Biotemas,* 22: 231-235.

Silveira, A.L.; Salles, R.D.O.L. & Pontes, R.C. 2010. Primeiro registro de *Elachistocleis ovalis* (Schneider, 1799) (Amphibia, Anura, Microhylidae) no Estado do Rio de Janeiro, Brasil. *Biotemas,* 23: 203-205.

Siqueira, C.C.; Vrcibradic, D. & Rocha, C.F.D. 2013. Altitudinal records of data-deficient and threatened frog species from the Atlantic Rainforest of the Serra dos Órgãos, in southeastern Brazil. *Brazilian Journal of Biology,* 73: 229-230.

Siqueira, C.C.; Vrcibradic, D.; Almeida-Gomes, M.; Menezes, V.A.; Borges-Jr., V.N.T.; Hatano, F.H.; Pontes, J.A.; Goyannes-Araújo, P.; Guedes, D.M.; van Sluys, M. & Rocha, C.F.D. 2011a. Species composition and density estimates of the anurofauna of a site within the northernmost large Atlantic Forest remnant (Parque Estadual do Desengano) in the state of Rio de Janeiro, Brazil. *Biota Neotropica,* 11(4): 131-137.

Siqueira, C.C.; Vrcibradic, D.; Dorigo, T.A. & Rocha, C.F.D. 2011b. Anurans from two high-elevation areas of Atlantic Forest in Rio de Janeiro State, Brazil. *Zoologia,* 28: 457-464.

Spix, J.B. 1824. *Animalia nova sive species novae Testudinarum Ranarum, quas in itinere per Brasiliam annis MDCCCXVII-MDCCCXX jussu et auspiciis Maximiliani Josephi I. Bavariae regis.* Munich, Typis Franc. Seraph. Hübschmanni.

Sturaro, M.J. & Peloso, P.L.V. 2014. A new species of *Scinax* Wagler, 1830 (Anura: Hylidae) from the Middle Amazon River Basin, Brazil. *Papéis Avulsos de Zoologia,* 54: 9-23.

Targino, M.; Costa, P.N. & Carvalho-e-Silva, S.P. 2009. Two new species of the *Ischnocnema lactea* species series from the Itatiaia highlands, southeastern Brazil (Amphibia, Anura, Brachycephalidae). *South American Journal of Herpetology,* 4: 139-150.

Taylor, E.H. 1968. *The caecilians of the World. A taxonomic review.* Lawrence, University of Kansas Press.

Telles, F.B.S.; Menezes, V.A.; Maia-Carneiro, T.; Dorigo, T.A.; Winck, G.R. & Rocha, C.F.D. 2012. Anurans from the "Restinga" of Parque Natural Municipal de Grumari, state of Rio de Janeiro, southeastern Brazil. *Check List,* 8: 1267-1273.

Thomé, M.T.C.; Zamudio K.R.; Giovanelli J.G.R.; Haddad C.F.B.; Baldissera Jr., F.A. & Alexandrino, J. 2010. Phylogeography of endemic toads and post-Pliocene persistence of the Brazilian Atlantic Forest. *Molecular Phylogenetics and Evolution,* 55: 1018-1031.

Thomé, M.T.C.; Zamudio, K.R.; Haddad, C.F.B. & Alexandrino, J. 2012. Delimiting genetic units in Neotropical toads under incomplete lineage sorting and hybridization. *BMC Evolutionary Biology,* 12: 1-13.

Toledo, L.F.; Loebmann, D. & Haddad, C.F.B. 2010. Revalidation and redescription of *Elachistocleis cesarii* (Miranda-Ribeiro, 1920) (Anura: Microhylidae). *Zootaxa,* 2418: 50-60.

van Sluys, M.; Cruz, C.A.G.; Vrcibradic, D.; Silva, H.R.; Almeida-Gomes, M. & Rocha, C.F.D. 2009. Anfíbios nos remanescentes florestais de Mata

Atlântica no Estado do Rio de Janeiro. *In:* Bergallo, H.G.; Fidalgo, E.C.C.; Rocha, C.F.D.; Uzêda, M.C.; Bebianno, M.C.; Alves, M.A.S.; van Sluys, M.; Santos, M.A.; Correa e Castro, T.C. & Cozzolino, A.C.R. (Eds.). *Estratégias e ações para a conservação da biodiversidade no Estado do Rio de Janeiro.* Rio de Janeiro, Instituto Biomas. p. 175-182.

Vences, M.; Guayasamin, J.M.; Miralles, A. & de la Riva, I. 2013. To name or not to name: Criteria to promote economy of change in Linnaean classification schemes. *Zootaxa,* 3636: 201-244.

Verdade, V.K. & Rodrigues, M.T. 2007. Taxonomic review of *Allobates* (Anura, Aromobatidae) from the Atlantic Forest, Brazil. *Journal of Herpetology,* 41: 566-580.

Vrcibradic, D.; Hatano, F.H.; Rocha, C.F.D. & van Sluys M. 2006. Geographic Distribution. *Phyllodytes luteolus. Herpetological Review,* 37: 489.

Vrcibradic, D.; Rocha, C.F.D.; Kiefer, M.C.; Hatano, F.H.; Fontes, A.F.; Almeida-Gomes, M.; Siqueira, C.C.; Pontes, J.A.; Borges-Junior, V.N.T.; Gil, L.O.; Klaion, T.; Rubião, E.C.N.; van Sluys, M. 2011. Herpetofauna, Estação Ecológica Estadual do Paraíso, state of Rio de Janeiro, southeastern Brazil. *Check List,* 7: 745-749.

Weber, L.N.; Verdade, V.K.; Salles, R.O.L.; Fouquet, A. & Carvalho-e-Silva, S.P. 2011. A new species of *Cycloramphus* Tschudi (Anura: Cycloramphidae) from the Parque Nacional da Serra dos Órgãos, Southeastern Brazil. *Zootaxa,* 2737: 19-33.

Werner, F. 1903. Neue Reptilien und Batrachier aus dem naturhistorischen Museum in Brussel. Nebst bemerkungen uber einige andere Arten. *Zoologischer Anzeiger,* 26: 246-253.

Wilkinson, M.; San Mauro, D.; Sherratt, E. & Gower, D.J. 2011. A nine-family classification of caecilians (Amphibia: Gymnophiona). *Zootaxa,* 2874: 41-64.

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