Catalogue of American Amphibians and Reptiles.

Powell, R. and A.M. Bauer. 2012. *Anolis gingivinus*.

Anolis gingivinus Cope
Anguilla Bank Tree Anole

Anolis gingivinus Cope 1864:170. Type-locality, "Anguilla Rock near Trinidad" (see Cope 1871), restricted by Lazell (1972) to Sandy Ground, Anguilla. Syntypes, British Museum of Natural History [now The Natural History Museum, London] (BMNH) 1946.8.29.15–20, BMNH 1946.8.29.15, an adult male, was designated the lectotype by Lazell (1980), the series was "presented by W.J. Cooper to the British Museum" (not examined by authors). See **Remarks**.

Anolis virgatus Garman 1887:41. Type-locality, "St.-Barthélémy." Syntypes, Academy of Natural Sciences of Philadelphia (ANSP) 23007 (adult female), National Museum of Natural History (USNM) 39300 (an adult male), University of Michigan Museum of Zoology (UMMZ) 60243 (an adult male and a subadult), Museum of Comparative Zoology (MCZ) 6165 (MCZ-R-171265–72, including at least one adult male), collected in 1884 by F. Lagois (not examined by authors).

Anolis krugi gingivinus: Barbour 1937:121.

Anolis bimaculatus gingivinus: Underwood 1959:196.

Ctenonotus gingivinus: Schwartz and Henderson 1988:112. See **Remarks**.

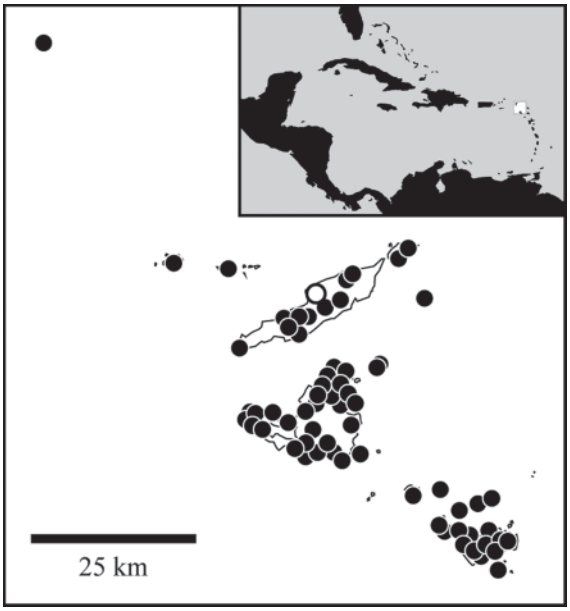
• **CONTENT.** No subspecies are recognized.

• **DEFINITION.** *Anolis gingivinus* is a medium-sized anole, with maximum SVL in males to 72 mm (Lazell 1972) and in females to 54 mm (Dobson et al. 1992, Eaton et al. 2002). The head scalation (Schwartz and Henderson 1991) is characterized by 5–6 rows of loreals, 1–3 scales between the interparietal and supraorbital semicircles, 3 postrostrals, and 4 postmentals. The subocular scales are in contact with the supralabials. The scales behind the interparietal merge grade gradually into dorsal body scales. Dorsal scales are granular, with the two middorsal rows enlarged and juxtaposed. Ventral scales are clycloid, smooth, and slightly imbricate. Supradigital scales are multicarnate. The middorsal row of caudal scales is enlarged. The 10th caudal verticil contains 4–5 rows of scales.

Individuals of both sexes are various shades of brown, occasionally olive to light green or rust with a cream to bright yellow venter. A broad middorsal stripe is usually evident, and bold, light stripes extend along the flank from shoulder to groin. Males may be heavily spotted or marbled with gray and brown. The dewlap is yellow-orange with white scales.

• **DIAGNOSIS.** Three other species in the genus *Anolis* have been reported from the Anguilla Bank. *Anolis pogus* is extant on St.-Martin/St. Maarten, existed on Anguilla, and might have occurred on St.-Barthélémy (Schwartz and Henderson 1991). An introduced population of *A. bimaculatus* was reported from St. Maarten by Powell et al. (1992), but that population is no longer extant (Powell et al. 2011). *Anolis carolinensis* was recently introduced to Anguilla (Eaton et al. 2001), where it persists in pockets of mesic habitats often associated with resorts. *Anolis gingivinus* can be distinguished from these sympatric congeners by the combination of smooth ventral scales (ventral scales are keeled in *A. pogus* and *A. carolinensis*) and the presence of a prominent pale flank stripe extending to the groin (*A. bimaculatus*

Figure 1. Adult male (top) and female *Anolis gingivinus* from St. Martin (photographs by John S. Parmerlee, Jr.).



Map. Distribution of *Anolis gingivinus* (modified from Schwartz and Henderson 1991). The circle marks the restricted type locality and dots indicate other records.

occasionally has a pale flank stripe, but it does not extend to the groin; Schwartz and Henderson 1985).

• **DESCRIPTIONS.** In addition to the original descriptions by Cope (1864) and Garman (1888), detailed descriptions are provided in Boulenger (1885), Lazell (1972), Schwartz and Henderson (1991), and Breuil (2002).

• **ILLUSTRATIONS.** Boulenger (1885) provided a black-and-white illustration of the species, and black-and-white photographs are in Wijffels (1960, 1964a, 1964b). Molle (1958, 1961a) presented black-and-white photographs of an *A. sagrei* x *A. gingivinus* hybrid. Color photographs are in Wijffels (1980), Heselhaus and Schmidt (1990), Roughgarden (1995), Fläschendräger and Wijffels (1996, 2009), Rojer (1997), Malhotra and Thorpe (1999), Breuil (2002, 2004), Hodge et al. (2003), Powell et al. (2005), Preston and Johnson (2010), Yokoyama (2010), and Wright (2011). Colored illustrations are in Lazell (1972) and Schwartz and Henderson (1985). Gorman and Atkins (1966) provided an illustration of the karyotype.

• **DISTRIBUTION.** An Anguilla Bank endemic, the species is found in a variety of natural and altered habitats throughout the Bank (Hodge et al. 2003). Anoles from Sombrero, which is on an island bank that was never connected to the Anguilla Bank, have historically been assigned to this taxon (see comments in Lazell 1964, Hodge et al. 2003, and Wright 2011). Cope (1871), followed by Barbour (1914, 1923, 1930a, 1930b, 1935, 1937), erroneously listed the species from St. Eustatius. The range was previously illustrated in Schwartz and Henderson (1991) and Breuil (2002).

• **FOSSIL RECORD.** Pregill et al. (1994) considered fossil *Anolis* material from Center Cave and The Fountain on Anguilla to be consistent with *A. gingivinus*, although definitively diagnostic features could not be found.

• **PERTINENT LITERATURE.** References to *Anolis gingivinus* are arranged by topic: **Behavior** (van Rekum 1960, Wijffels 1960, Molle 1961a), **conservation status** (Hodge et al. 2003, 2011; Powell et al. 2005; Powell 2006, 2011; Lorvelec et al. 2007, 2011), **ecology and natural history** (Wijffels 1964a; Heckel 1980; Pacala and Roughgarden 1982, 1985; Roughgarden et al. 1983a, 1983b, 1984; Roughgarden 1983, 1986, 1995; McLaughlin and Roughgarden 1989; Roughgarden and Pacala 1989; Schwartz and Henderson 1991; Powell and Henderson 1992, 2008; Goldwasser and Roughgarden 1993; Henderson and Sajdak 1996; Shafir and Roughgarden 1998; Breuil 2002; Eaton et al. 2002; Pereira et al. 2002; Shew et al. 2002; Hodge et al. 2003; Powell et al. 2005; Larimer et al. 2006; Perry et al. 2008; Henderson and Powell 2009; Losos 2009; Yokoyama 2010), **evolution, systematics, phylogenetics, and biogeography** (Gorman and Atkins 1966, 1969; Lazell 1972; Gorman and Kim 1976; Chakraborty et al. 1978; Gorman and Renzi 1979; Heckel 1980; Roughgarden et al. 1983a; Burnell and Hedges 1990; Losos 1990, 1992a, 2009; Nicholson et al. 2005; Roughgarden 1992, 1995; Miles and Dunham 1996; Butler and Losos 1997; Schneider et al. 2001; Stenson et al. 2004; Thomas et al. 2009), **husbandry (including captive hybridization)** (Molle 1961b,c,d; Mertens 1964; Wijffels 1964a,b; Stettler 1978; Fläschendräger and Wijffels 1996, 2009; Heselhaus and Schmidt 1990), **karyotype** (Gorman and Atkins 1966, Gorman 1973, Schwenk et al. 1982), and **parasites and parasite-mediated competition** (Schall 1990, 1992; Dobson and Pacala 1992; Dobson et al. 1992; Dobson and Roberts 1994; Bursey and Goldberg 1996; Goldberg et al. 1997; Staats and Schall, 1996a–b; Schall and Staats 1997; Perkins 2001; Telford 2009; Losos 2009; Preston and Johnson 2010).

This species is included in **checklists, guides, and notes** (some of which include brief descriptions)**, and general works** (topics in parentheses) by Archie et al. (1989, allozyme frequency data), Barbour (1914, 1923, 1930a, 1930b, 1935, 1937), Barbour and Loveridge (1929), Bergmann (2008), Beuttell and Losos (1999, ecomorphology), Biknevicius et al. (1993), Brandley and de Queiroz (2004, outgroup in phylogenetic study), Breuil (2004), Censky and Kaiser (1999), Cochran (1934, 1938, 1961), Cope (1869), Currat (1980), Dunn (1934), Edgar (2010), Etheridge (1960, anoline relationships based on skeletal morphology), Faizool (1998), Fläschendräger (2010, possible interactions with introduced *A. sagrei*), Fläschendräger and Wijffels (1996, 2009), Frank and Ramus (1995), Fuerst et al. (1977, protein polymorphism), Garman (1887), Gerber (1999, intraguild predation), Glossip and Losos (1997, subdigital lamellae), Harvey (1993, evolutionary succession), Heckel and Roughgarden (1979) and Heckel (1982, estimating population sizes), Henderson and Breuil (2012), Henderson and Powell (1999, 2009), Herrel et al. (2004, frugivory), Hodge et al. (2003, 2011), Kluge (1984), Levesque et al. (2008), Lorvelec et al. (2007, 2011), Losos (1992b, community structure; 1994a, 2009, anoles as model organisms; 1994b, history and community ecology; 1996, species-area relations), Losos and de Queiroz (1997, ecological release), MacLean et al. (1977), Malhotra and Thorpe (1999), Malnate (1971), Naganuma and Roughgarden (1990, optimal body size), Nicholson et al. (2007, dewlap diversity), Ogden et al. (1985, Sombrero Island), O'Hare and Williams (1994, see also Williams et al. 1995), O'Shaughnessy (1875), Pacala et al. (1983, field enclosures), Parker (1933), Poe (1999, 2004, phylogeny), Poe et al. (2005, phylogeny reconstruction; 2007, solitary anoles; 2011, colonization), Pough et al. (1998), Powell (2006, 2011), Powell et al. (1996, 2005), Pregill et al. (1994, fossil material), Procter and Fleming (1999), Rojer (1997), Roughgarden (1974, niche width; 1990, origin of the eastern Caribbean), Schoener (1970a, size correlations between sympatric species; 1970b, spatial overlap),

Schwartz and Henderson (1985, 1988, 1991), Schwartz and Thomas (1975), Sinervo et al. (2010, effects of climate change), Sites and Murphy (1991, genetics), Stamps and Andrews (1992, estimating asymptotic size), Stenson et al. (2000, microsatellites), Stettler (1978), Underwood (1959, 1962), Vitt and Caldwell (2009), Williams (1969, zoogeography; 1972, origin of faunas; 1976, 1999), and Zug et al. (1993, 2001).

• **ETYMOLOGY.** The name *gingivinus* is derived from the Latin, "pertaining to the gums." The relevance of the name is uncertain.

• **REMARKS.** Lazell (1980) noted that the type series (BMNH 1946.8.29.15–20) consisted of six specimens, Underwood (1959) listed only three (BMNH 1946.8.29.18–20), and that shorter series subsequently was recorded by Schwartz and Thomas (1975), Schwartz and Henderson (1988, 1991), and Breuil (2002).

Guyer and Savage (1986) elevated the anoline genus *Ctenonotus*, in which they (Savage and Guyer 1989, 2004) placed *Anolis gingivinus*. Although the genera recognized by Guyer and Savage (1986) were used by Schwartz and Henderson (1988) and have been employed especially by biologists working on the American mainland, we prefer a more conservative approach until concerns regarding generic relationships among anoles (e.g., Williams 1989) have been addressed. Subsequent to Schwartz and Henderson (1988), no major publications dealing with West Indian species of anoles have used the generic names advocated by Guyer and Savage (1986).

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