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# *Artibeus glaucus* (Chiroptera: Phyllostomidae)

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***Abstract:*** The silvery fruit-eating bat (*Artibeus glaucus* Thomas, 1893) is a small sized phyllostomid bat with indistinct facial stripes and obscure pale edging on the ears, dark brown pelage with less contrast on the shoulders and venter, and dorsal fur that extends beyond the posterior margin of the uropatagium. It has a narrow distribution associated with intermediate elevations (200–2,000 m) in the Andean Mountains, mainly in Ecuador, Peru, and Bolivia. It has also been found to inhabit lowland areas but not in high numbers. *A. glaucus* is classified as "Least Concern" by the International Union for Conservation of Nature and Natural Resources.

***Key words:*** bat, frugivore, phyllostomid, silvery broad-nosed bat, South America

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## *Artibeus Glaucus* THOMAS, 1893

Silvery Fruit-eating Bat

*Artibeus glaucus* Thomas, 1893:336. Type locality "Chanchamayo," Junín, Perú.

[*Artibeus* (*Artibeus*)] *glaucus*: Trouessart, 1897:160. Name combination.

*Artibeus cinereus bogotensis*: Andersen, 1906:421. Type locality "Curiche, [Cundinamarca] near Bogota, Colombia." (See Nomenclatural Notes).

*Artibeus pumilio* Thomas, 1924:531. Type locality "Tushemo, near Masisea, R. Ucayali [Perú] Alt. 1000´."

*Artibeus cinereus glaucus*: Hershkovitz, 1949:449. Name combination.

*Artibeus cinereus pumilio*: Hershkovitz, 1949:449. Name combination.

*Dermanura glauca*: Owen, 1987:47. Name combination. (see Nomenclatural Notes).

*Dermanura cinerea bogotensis*: (Owen, 1987:64). Name combination.

*A*[*rtibeus*]. *g*[*laucus*]. *glaucus*: Handley, 1987:166. Name combination.

*Artibeus glaucus bogotensis*: Handley, 1987:166. Name combination.

*Artibeus* (*Dermanura*) *glaucus*: Koopman, 1993:188. Name combination.

**Fig. 1.**—A male *Artibeus glaucus* from Estación Biológica Jatún Sacha, Provincia de Napo, Ecuador. Used with permission of the photographer Octavio Jiménez Robles.



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CONTEXT AND CONTENT. Order Chiroptera, family Phyllostomidae, subfamily Stenodermatinae, tribe Stenodermatini, genus *Artibeus*. Synonymy modified from Marques-Aguiar (2008). *A. glaucus* is monotypic (Lim et al. 2008).

NOMENCLATURAL NOTES. Gervais (1856) suggested that members of the genus *Artibeus* should be split into 2 genera, *Artibeus* (the larger species in the taxa) and *Dermanura* (the smaller members of the group such as *glaucus*). In 1908, Andersen concluded that the aspects of tooth morphology used by Gervais did not produce a natural phylogenetic relationship and thus synonymized *Dermanura* with *Artibeus*. Owen's (1987) analysis of external, cranial, mandibular, and dental characters led him to resurrect the genus *Dermanura* (Gervais 1856) for the smaller taxa. This conclusion was also supported by Van Den Bussche (1992) using ribosomal DNA restriction-site data. More recently, Wetterer et al. (2000) analyzed 150 morphological, karyological, and molecular characters and hypothesized that *Dermanura* was a subgenus of *Artibeus* based on its close phylogenetic affinities with *Artibeus* sensu stricto. *Artibeus bogotensis* (originally described by Andersen 1906) has recently been recognized as a distinct and allopatric species from *A. glaucus* (Lim et al. 2008), therefore we included only information pertaining to *A. glaucus glaucus*.

The generic name, *Artibeus*, comes from 2 Greek words: *arti*, meaning facial lines, and *beus*, in reference to the presence of evident facial lines (Alvarez-Castañeda and Alvarez 1996). The species name, *glaucus*, was derived from the Greek work *glaus*, meaning apparently without a color connotation.

## DIAGNOSIS

*Artibeus glaucus* is distinguished from other species of the genus by a combination of characters including size (e.g., members of the subgenus *Dermanura* present a forearm length of 46 mm and members of the subgenus *Artibeus* have a forearm length of 46 mm), pelage coloration, and morphology of the skull and teeth (Figs. 1 and 2). *A. glaucus* is externally distinguished from *A. bogotensis* (Bogota fruit-eating bat) by the presence of faint or indistinct, white facial stripes and edging on the ears (*A. bogotensis* has distinct facial markings), dark brown pelage (*A. bogotensis* has pale brown), and dorsal fur that extends beyond the posterior margin of the uropatagium (in *A. bogotensis* hair does not extend beyond margin). Cranially, *A. glaucus* has a small 3rd lower molar and a robust orbitorostral region, whereas *A. bogotensis* does not have a 3rd lower molar and the orbitorostral region is poorly developed. In addition, specimens of *A. bogotensis* have a less furred uropatagia than *A. glaucus*. *A. glaucus* is distinguished from *A. anderseni* (Andersen's fruit-eating bat) and *A. gnomus* (dwarf fruit-eating bat) by the absence of the 3rd lower molar in those species, and they are smaller in overall size: forearm length ranges from 34 to 36 mm for *A. anderseni* and *A. gnomus*, and forearm length ranges from 36 to 39 in *A. glaucus*. Also edging on ears and noseleaf in *A. glaucus* is bright yellow compared with the subdued white in the smaller species. *A. glaucus* has supraorbital ridges that are parallel-sided, whereas in *A. cinereus* (Gervais's fruit-eating bat), these ridges converge posteriorly, and *A. cinereus* does not have a small 3rd lower molar (Lim et al. 2008; see Fig. 2).

## GENERAL CHARACTERS

*Artibeus glaucus* is a small sized Neotropical bat (Fig. 1). The species has indistinct facial stripes and obscure pale edging on the ears, dark brown pelage with less contrast on the shoulders and venter compared with other *Artibeus*. There is some


**Fig. 2.**—Dorsal, ventral, and lateral views of skull and lateral view of mandible of an adult male *Artibeus glaucus* (AMNH [American Museum of Natural History] 37197) from Río Inambari, Puno, Peru. Greatest length of skull, excluding incisors is 19.68 mm.

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external variation with the specimens from Amazonas, Peru, which have more prominent facial stripes and edging on the ears than those from Cuzco, Peru (Lim et al. 2008).

Ranges of external measurements (mm) for 8 specimens from Peru (4 females and 4 males—Swanepoel and Genoways 1979), 3 specimens from Ecuador and Peru (Davis 1970), 2 specimens (including holotype) from Peru (females—Andersen 1908; Carter and Dolan 1978), 4 specimens from Bolivia (3 females and 1 male—Webster and Jones 1980), and specimens from Ecuador (Tirira 2007) were: head and body length, 43–62; hind foot length, 8–12; ear length, 12–17; forearm length, 37.5–43.8; and weight, 10–14 g.

Ranges of cranial measurements (mm) of 7 specimens from Amazonas and Cuzco, Peru (Lim et al. 2008), 8 specimens from Peru (4 females and 4 males—Swanepoel and Genoways 1979), 9 specimens from Ecuador and Peru (Davis 1970), 2 specimens (including holotype) from Peru (females—Carter and Dolan 1978), and 4 specimens from Bolivia (3 females and 1 male––Webster and Jones 1980) were: greatest length of skull, 19.0–20.9; zygomatic breadth, 10.8–12.1; mastoid breadth, 9.7–11.0; rostral length, 8.3–9.1; postorbital constriction, 4.7–6.0; palatal length, 7.2–7.5; maxillary toothrow length, 5.9–6.7; breadth across upper molar, 7.9–8.9; width across upper canines, 5.1–5.8; and coronoid height, 4.9–5.3.

## DISTRIBUTION

*Artibeus glaucus* is found in Ecuador, Perú, and Bolivia (Fig. 3; Moya and Arteaga 2007; Marques-Aguiar 2008). The species can be found in lowland habitats but is mainly found at intermediate elevations in the Andean mountains (between 200 and 2,000 m, but most often found below 1,200 m in Ecuador—Tirira 2012). There are no known fossil records for the species.

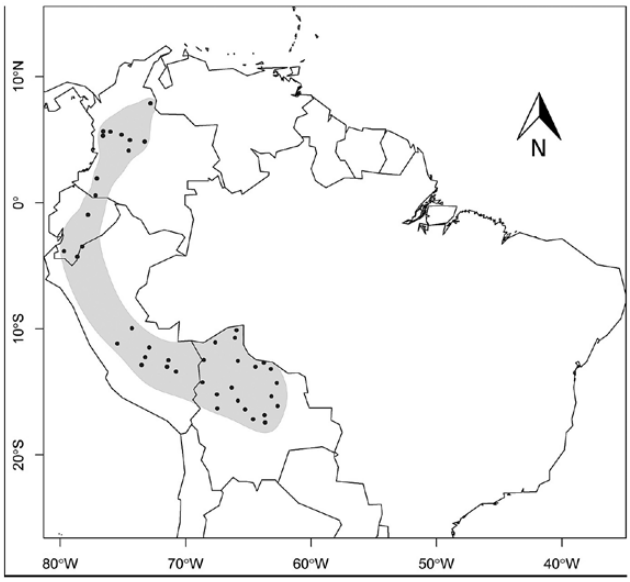


**Fig. 3.**—Geographic distribution of *Artibeus glaucus*. Localities of sampled specimens (taken) from collections records and literature are indicated by dots.

## FORM AND FUNCTION

Dental formula is i 2/2, c 1/1, p 2/2, m 2/3, total 30. Proximate, caloric, nitrogen, and mineral composition values were obtained for *Artibeus glaucus* by Studier et al. (1994). Males ($n$ = 7): live mass (g) = 8.60, comprised of: water, 69.08; fat, 2.39; ash, 4.74; nonfat organic, 23.78; caloric density (kcal/g dry mass), 3.95; water index, 2.43; and fat index (g/g lean dry mass), 0.084. Concentrations of indicated minerals were (mg/g dry mass): nitrogen, 163.23; iron, 0.376; calcium, 12.31; magnesium, 0.951; sodium, 4.29; and potassium, 10.56. Females ($n$ = 5): live mass = 9.32 g, comprised of: water, 69.47; fat, 2.609; ash, 4.24; nonfat organic, 23.67; caloric density (kcal/g dry mass), 4.065; water index, 2.515; and fat index (g/g lean dry mass), 0.096. Concentrations of indicated minerals were (mg/g dry mass): nitrogen, 164.58; iron, 0.347; calcium, 13.24; magnesium, 1.056; sodium, 4.543; and potassium, 10.464.

## ECOLOGY

*Artibeus glaucus* is a common species in secondary abandoned crop fields and in logging forest, but it also can be found in montane mature forestand primary lowland rain forest (Vargas-Espinoza et al. 2008). It is a common species in lowland forest of Ecuador and Peru (Bravo Cabezas et al. 2003; Lim et al. 2008); in Ecuador, it is found in tropical and subtropical humid forests and lowland temperate forest (Tirira 2012). *A. glaucus* has a mean relative abundance of 0.78 individuals per 4,500 m of riverine tropical forest of Peru (Pacheco et al. 2011).

*Artibeus glaucus* is considered a functional foliage gleaner because it feeds on fruits of the canopy section (Loayza et al. 2006). It has been found roosting under the cut leaves of *Xanthosoma* (Araceae) in Ecuador (Timm 1987).

*Artibeus glaucus* has a bimodal polyestry reproductive pattern (Wilson 1979). Pregnant or lactating females have been found from January to August in Ecuador and from October to December (Albuja 1983).

Ectoparasites are not known for *A. glaucus*, but several reports exist for *A. bogotensis*, the sister species (Tipton and Machado-Allison 1972; Wenzel 1976; Guerrero 1997). Prevalence of *Bartonella* infection was not found in specimens of *A. glaucus*, after an extensive survey in 19 different bat species from the Amazon region of Peru (Bai et al. 2012).

## GENETICS

The diploid number (2n) of chromosomes for *Artibeus glaucus* is 30–31, the fundamental number (FN) is 56, with a $Y_1$ and $Y_2$ chromosome system (X-autosome fusion). The X

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chromosome is subtelocentric and the $Y_1$ and $Y_2$ chromosomes are both acrocentrics (Gardner 1977).

Lim et al. (2008) studied the molecular and morphological variation of *A. glaucus* and found strong evidence that *A. bogotensis* and *A. glaucus* should be recognized as distinct and allopatrically occurring species. Molecular phylogenies using the mitochondrial cytochrome *b* gene found strong support for the relationship of *A. glaucus* sister to the clade conformed by *A. bogotensis* + *A. gnomus* (Lim et al. 2008; Solari et al. 2009). The average Kimura-2 parameter genetic distance for cytochrome *b* is 7.3% between *A. bogotensis* and *A. gnomus*, 9.5% between *A. bogotensis* and *A. glaucus*, and 10.4% between *A. gnomus* and *A. glaucus* (Lim et al. 2008).

Using cytochrome *b* sequences, the haplotype diversity for the species is 0.9000, the nucleotide diversity is 0.0281, the maximum interspecific diversity is 0.0428, and the minimum intraspecific diversity is 0.089, last 2 parameters by using the K2P model (Redondo et al. 2008).

## CONSERVATION

*Artibeus glaucus* is classified as "Least Concern" in the 2008 International Union for Conservation of Nature and Natural Resources Red List of Threatened Species (Sampaio et al. 2008); however, when this classification was assigned, *A. bogotensis* was considered a subspecies of *A. glaucus*. *A. glaucus* is considered common and frequent with stable populations in Ecuador (Tirira 2007).

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