

# Range extensions for two threatened glassfrogs, *Cochranella mache* Guayasamin & Bonaccorso, 2004 and *Sachatamia albomaculata* (Taylor, 1949), from remnants of threatened Ecuadorian Chocóan forest

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The glassfrog (Centrolenidae) family is a monophyletic group (Guayasamin et al., 2008, 2020) distributed in the Neotropics from tropical Central America, through the tropical Andes, and in the Sierra Nevada de Santa Marta in Colombia, the Cordillera de la Costa of Venezuela, Tobago, the Guiana Shield, the Amazon Basin, and the Atlantic forests of Brazil (Guayasamin et al., 2025). The family contains 12 genera with 167 species (Frost, 2025) as of July 2025. In Ecuador, there are ten genera with 70 species (Frost, 2025; Guayasamin et al., 2025). Centrolenids are nocturnal and arboreal species, mostly associated with streams or ponds (Guayasamin et al., 2020, 2025). They share some traits such as having a completely or partially translucent venter, out-of-water deposition of eggs along streams and forward-directed eyes (Guayasamin et al., 2020). Two genera, *Sachatamia* and *Cochranella*, are evolutionary recent, appearing approximately in the Neogene (18 mya) (Guayasamin et al., 2020, 2025). Herein we present a range extension for two glassfrogs of the genera *Sachatamia* and *Cochranella* in Manabí, a very poorly

explored province, and in one of the few remnant primary forests in the region.

The genus *Sachatamia* (Guayasamin et al., 2009) contains five species that occur in Central and South America, from Honduras through Nicaragua, Costa Rica, and Panama to Colombia and northwestern Ecuador (Guayasamin et al., 2025). *Sachatamia* species are broadly characterised by having green bones, absence or presence of humeral spines, lobed liver covered by a transparent hepatic peritoneum and a translucent digestive tract (Guayasamin et al., 2025). In Ecuador, there are three species: *S. albomaculata* (Taylor, 1949), *S. ilex* (Savage, 1967) and *S. orejuela* (Duellman and Burrowes, 1989), distributed in the tropical rainforest of Northwestern Ecuador (Coloma and Duellman, 2025).

*Sachatamia albomaculata* is known from the humid lowlands and premontane slopes from north-central Honduras to western Colombia and Ecuador between elevations of 20 to 1620 m (Guayasamin et al., 2025). This species is catalogued as Vulnerable by Ortega-Andrade et al. (2021) as its distribution is severely fragmented and because there is a continuing decline in the extent of its habitat since the Chocó is one of the areas with the highest deforestation rate in Ecuador (Kleemann et al., 2022). In Ecuador, this species occurs in Imbabura, Esmeraldas, Pichincha and Santo Domingo de los Tsáchilas provinces, with an elevational range of 61–1620 m, in an area of occurrence of about 9930 km<sup>2</sup> (Guayasamin et al., 2020, 2025). Records from Manabí province (Guayasamin et al., 2025), in the private reserve of Reserva Biológica Bilsa, located within the Macho Chindul mountains, actually come from Esmeraldas province, very close to the border with Manabí. Here, we present two new distribution records for *S. albomaculata* and the first record in Manabí, which represents the southwestern distribution for this species (Guayasamin et al., 2020; Guayasamin et al., 2025; Fig. 1). We found the species in two private reserves:

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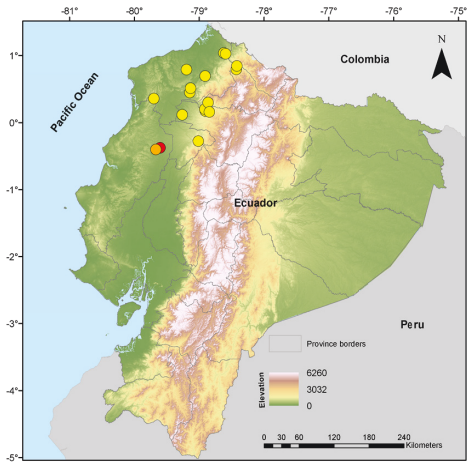
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“Bosque La Esperanza” (0.3752°S, 79.6043°W), a 14-ha site located in the community of El Zapote, El Carmen parish, and “Reserva Ateles” (0.3986°S, 79.6717°W), a 200-ha site located between the communities of Patria Nueva and Cabecera Pambilar, Wilfrido Loor Moreira parish, in the northwestern region of Manabí province, Ecuador.

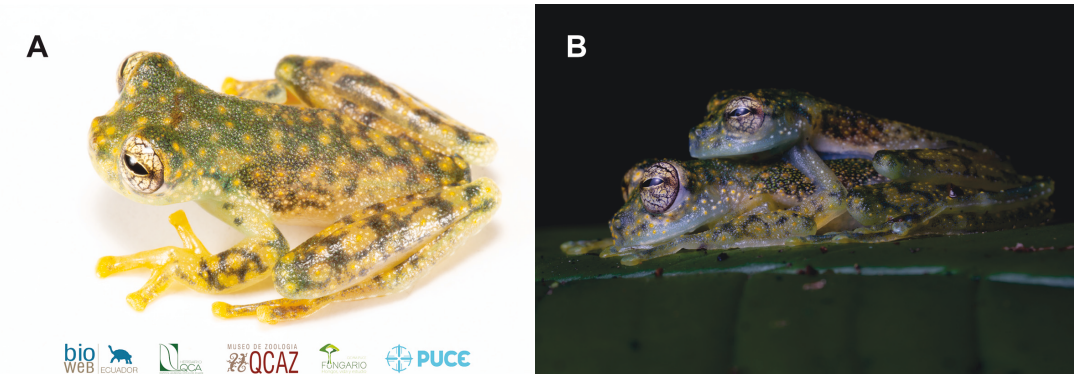
On 10 December 2024 at 20:00 h, we heard the call of a *S. albomaculata* while surveying herpetofauna within the Bosque La Esperanza private reserve (Great Leaf Foundation) (0.3753°S, 79.6058°W, elevation 212 m). MLMW (see authors) then observed the *S. albomaculata* individual (snout-vent length 22.0 mm) perched atop a branch of a *Sorocea sarcocarpa* tree (Moraceae), approximately 2 m above the ground and 7–8 m from a nearby stream (Fig. 2A). Several additional males were heard but not seen. The frog was collected and euthanised using roxicain, fixed with 10% formalin, preserved in 75% ethanol, and deposited in the herpetological collection of the Museo de Zoología, Pontificia Universidad Católica del Ecuador in Quito, Ecuador (Museum code: QCAZA79946) under research permit MAAE-DBI-CM-2022-0230. On 20 July 2024 at 20:22 h, while surveying herpetofauna within the Reserva Ateles private reserve (Fundación Cóndor Andino), JC (see authors) observed two *S. albomaculata* perched on a leaf of an unidentified plant in amplexus, approximately 1 m above a small stream (0.3986°S, 79.6717°W, elevation 264 m; Fig. 2B). Other individuals were heard calling across the stream. The amplexus was photographed in situ without collecting the individuals.

Species identity as *S. albomaculata* was verified using



**Figure 1.** Map illustrating the geographic distribution of *Sachatamia albomaculata* in Ecuador. Yellow dots represent the known localities, the red dot represents the new locality in Bosque La Esperanza private reserve, and the orange dot represents the new locality in Reserva Ateles private reserve, Manabí, Ecuador. Previous distribution records were based on Guayasamin et al. (2020, 2025).

diagnostic characteristics described by Guayasamin et al. (2020): snout round to truncated in dorsal profile and mostly truncated in lateral profile, tympanum evident, dorsal skin of males and females shagreen, skin on venter areolate, anterior half of ventral parietal peritoneum covered by white iridophores and posterior half transparent, humeral spine absent, relative extensive webbing between Fingers III and IV, dorsum green with small and large yellow spots, iris silvery white to



**Figure 2.** Specimens of *Sachatamia albomaculata*. (A) Dorsolateral view of the specimen from “Bosque La Esperanza” (QCAZA79946), photo taken ex situ at the Museo de Zoología (QCAZ), Pontificia Universidad Católica del Ecuador in Quito, Ecuador. (B) In-situ photo of amplexus pair at “Reserva Ateles”. Photos by Diego Paucar (A) and Jaime Culebras (B).

yellow with black reticulations. The identification was further confirmed via call recording of surrounding individuals (call mentioned in Guayasamin et al., 2020). Discovering *S. albomaculata* in “Bosque La Esperanza” and “Reserva Ateles” extends the species distribution 84 km southwards from the nearest previously reported locality in Esmeraldas (Reserva Biológica Bilsa), and 74 km eastwards from the nearest previously reported locality in Santo Domingo (La Florida).

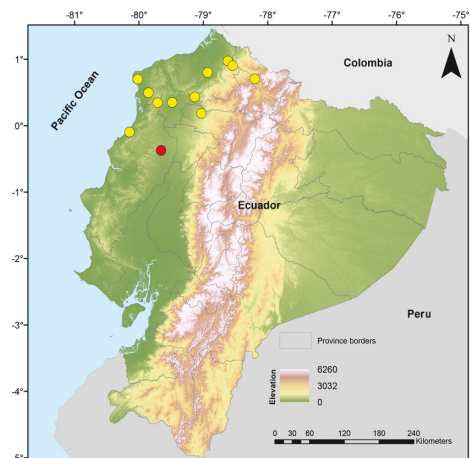
The genus *Cochranella* (Taylor, 1951) contains eight species as of July 2025 (Frost, 2025) distributed from Honduras to the Amazonian and Andean cloud forests of Colombia, Ecuador, Peru, and Bolivia (Guayasamin et al., 2025). This genus is broadly characterised by absence of humeral spines, white digestive tract, ventral parietal peritoneum white anteriorly and transparent posteriorly, green bones in life, and a lobed liver covered by a transparent hepatic peritoneum (Guayasamin et al., 2025). In Ecuador, there are four species: *C. granulosa* (Taylor, 1949), *C. litoralis* (Ruiz-Carranza and Lynch, 1996), *C. mache* Guayasamin and Bonaccorso, 2004, and *C. resplendens* (Lynch and Duellman, 1973), distributed in tropical rainforest in western Ecuador and the Amazon basin of Ecuador.

*Cochranella mache* is likely restricted to the remaining lowland forest in northwestern Ecuador and the Pacific lowlands in southwestern Colombia and is categorised as Endangered by Ortega-Andrade et al. (2021) as its distribution is severely fragmented due to human activities (Jaramillo-Martínez et al., 2015; Guayasamin et al., 2025). In Ecuador, it occurs in Esmeraldas and Manabí provinces, with an elevational range of 82–654 m, in an area of an extent of 7290 km<sup>2</sup> (Guayasamin et al., 2020, 2025). In Manabí province, it has only been reported in the Reserva Jama-Coaque (Lynch et al., 2014). Here, we present a new distribution record for *Cochranella mache* in Manabí (Fig. 3), which represents the southwestern distribution for this species (Guayasamin et al., 2020, 2025), and its presence in another private reserve “TENKA” (0.3688°S; 79.6532°W), a 83 ha site located in the community of Santa Rosa de Campeche, El Carmen parish, in the northwestern region of Manabí province, Ecuador.

On 15 November 2024 at 20:30 h, while doing a preliminary assessment of the herpetofauna within the new acquired forest remnant of the Great Leaf, “TENKA” private reserve, IM-C (see authors) saw a juvenile *C. mache* (0.3735°S; 79.6563°W, elevation 162 m; Fig. 4). The individual was recent metamorphic green glassfrog with yellow dorsal spots on the surface (snout-vent length 11.9 mm), that was sitting on a leaf

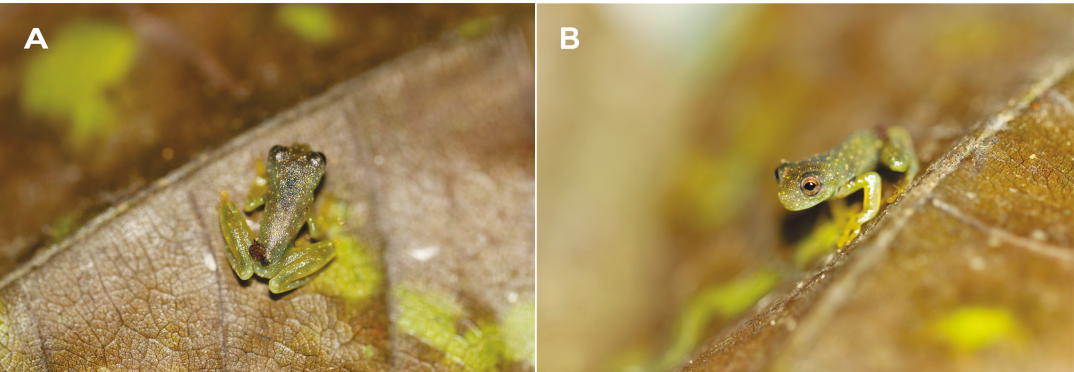
at 120 cm above ground, about 100 cm from a small stream. The animal was captured and euthanised using roxycain, fixed with 10% formalin, preserved in 75% ethanol, and deposited in the herpetological collection of the Museo de Zoología, Pontificia Universidad Católica del Ecuador in Quito, Ecuador (Museum code: QCAZA79911) under research permit MAAE-DBI-CM-2022-0230. Species identification was first confirmed by JC (see authors) and then verified using diagnostic characteristics described by Guayasamin et al. (2020): snout subacuminate in dorsal aspect and gradually inclines in lateral profile, tympanic annulus visible, dorsal skin shagreen with warts that usually correspond to light spots, ventral skin granular, Finger I about same length as Finger II, and in life iris whitish cream to beige with thin brown reticulation and white to golden circumpupillary ring. Some diagnostic characters such as webbing between fingers or the characteristic dermal folds and tubercles were not yet present (or not clearly recognisable) due to the recent metamorphic state of the individual (Coloma and Duellman, 2025).

Finding *C. mache* in “TENKA” extends the species distribution 63 km south-eastward from the nearest previously reported locality in Manabí (Jama-Coaque private reserve). Both frogs were found in small forest remnants surrounded by a mosaic of agricultural land, human infrastructure and pasture (Fig. 5) in the western coastal region of Ecuador. This region is one



**Figure 3.** Map illustrating the geographic distribution of *Cochranella mache* in Ecuador. Yellow dots represent the known localities, and the red dot represent the new locality in TENKA private reserve, Manabí, Ecuador. Previous distribution records were based on Guayasamin et al. (2020, 2025).

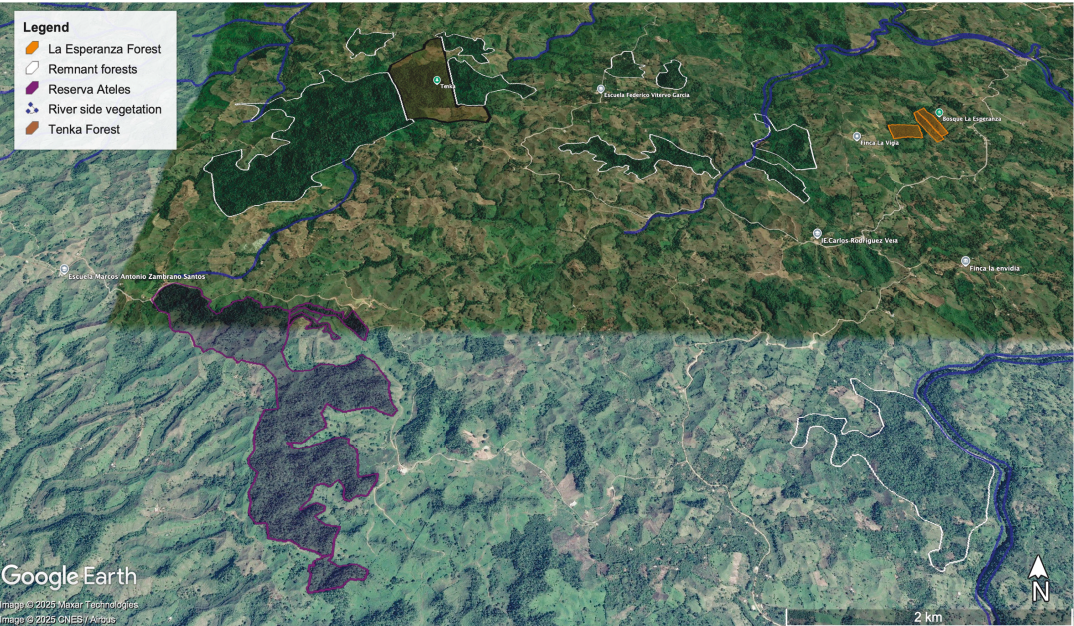




**Figure 4.** Specimen of *Cochranella mache* (QCAZA79911). (A) Dorsal view and (B) Lateral view. Photos in situ were taken at Bosque La Esperanza, Manabí, Ecuador. Photos by Moira L.M. Wiedebusch.

of the most severely threatened biogeographic regions globally (Dodson and Gentry, 1991, CEPF, 2005), highlighting the importance of small forest fragments for conservation of threatened amphibian populations (Steigerwald et al., 2024). Western Ecuador comprises parts of the Tumbes-Chocó-Magdalena hotspot and the Chocó-Manabí Conservation Corridor (CEPF, 2005). The Chocó region is one of the areas with the highest

levels of biological diversity and endemism in the world (Fagua and Ramsey, 2019; Finer and Mamani, 2019), and at the same time it is a deforestation hotspot (Kleemann et al., 2022), currently with less than 11% of primary forest remaining (Fagua and Ramsey, 2019). Primary forests are declining worldwide (Gibson et al., 2011), and the few remaining lowland forests are threatened by ongoing anthropogenic activities (Finer



**Figure 5.** Satellite image of the landscape where “Bosque La Esperanza”, “TENKA” and “Reserva Ateles” are located. The agricultural mosaic surrounding the small forest remnants are being use as cacao and plantain plantation, and for livestock production. Image taken of Google Earth and edited by Andrea E. Narváez.



and Mamani, 2019) and fragmentation (Echeverry and Harper, 2009; MECN et al., 2013; Cuadrado et al., 2023). We highlight the need for more protection and conservation policies for the last Chocóan lowland forests in the region, and the importance of further field work in Manabí, one of the least studied regions in terms of herpetological diversity (collection gaps) in Ecuador (Coloma and Duellman, 2025).

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