Notes on *Corallus blombergi* (Rendahl & Vestergren, 1941) from Ecuador

Three snake species of the genus *Corallus* were reported from Ecuador: *C. caninus* (Linnaeus, 1758) and *C. hortulanus* (Linnaeus, 1758) are restricted to the lowlands of the Amazonian region, and *C. blombergi* (Rendahl & Vestergen, 1941) is distributed in the lowlands of the west of Ecuador (Henderson et al. 2001; Pérez-Santos & Moreno 1991). The southern *Corallus annulatus* Cope, 1876 were elevated to species level (*C. blombergi*) from formerly *C. annulatus blombergi* by Henderson et al. (2001) on the basis of morphological features. This elevation resulted in a comparatively small range area of the new species in the west of Ecuador. Unlike the rest of the species which are abundant in collections, *C. blombergi* is a little known snake with limited records of specimens in museums and reference collections (Henderson 1998).

Herein, we present information on its distribution, natural history and aspects of its current status of conservation. Abbreviations used in the text include: FHGO = Fundación Herpetológica Gustavo Orcés, Quito; UDA-AMARU = Universidad del Azuay – ZooAmaru, Herpetological Collection, Cuenca; SVL = snout-vent length.

A single specimen of *C. blombergi* (UDA-AMARU 0019) was collected at 79° 23'48"W, 02°45'15"S, 256 m a.s.l. in the small tropical rain forest reserve of Bosque Protector Molleturo Mullopungo located in the parish of Molleturo, province of Azuay, some few kilometers off the route Cuenca-Molleturo and 15 kilometers from the city of Naranjal, province of Guayas. This individual represents the southernmost record of the species in Ecuador and the whole of South America. Thus, the currently known distribution of *C. blombergi* in Ecuador includes the province of Esmeraldas in the north (major report of individuals), the provinces of Guayas and Los Ríos in the central western portion (Pérez-Santos & Moreno 1991; Henderson 1997; Henderson et al. 2001), and the province of Azuay located in the south of the country (present record, Fig. 1). The linear distance between the southernmost known record (Guayas) and the new one (Molleturo) is 93 km.

The individual collected at Molleturo (SVL 1115 mm, tail length 137 mm, Fig. 2) and maintained in captivity in the collection of the Amaru Zoo, Cuenca**,** is of orange dorsal coloration. There are 56 irregular circles on each side of the body**,** plus tail**,** which are formed by dark brown spots, two scales wide each. The size of the circles is on the average**,** six scales in longitudinal**,** and 11 in transversal direction**,** including the scales of the dark edge. In the first quarter of the body, the portions of the circles which meet in the vertebral region are connected to form

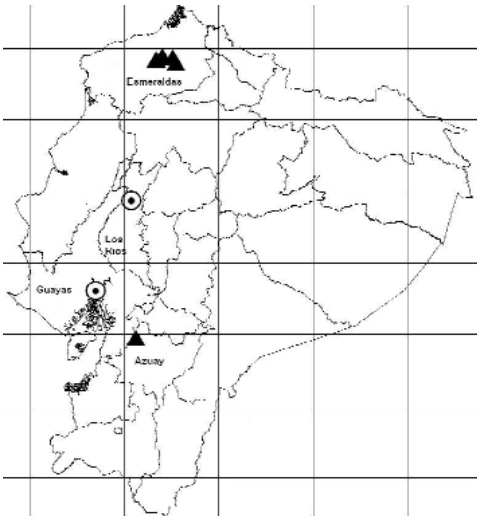

Fig. 1: Distribution of the Neotropical tree boa *Corallus blombergi* (RENDAHL & VESTERGREN, 1940) in Ecuador. ▲ - material deposited at the Fundación Herpetológica Gustavo Orcés, Quito, Ecuador or University of Azuay; ⊙ - data from the literature (HENDERSON et al. 2001).

bobbin-shaped brown spots. Dorsally, sporadic brown spots are dispersed over the body. The venter is cream and orange in some sections, the dorsal circles can reach the ventral scales. The pupil is black and elliptic, clearly differentiated from the orange color of the iris. Number of longitudinal dorsal scale rows: 44-50-32; subcaudals divided: 80; ventrals: 256; anal plate divided; infra-loreals: 4; infra-loreals plus loreals: 7; intersupraorbitals: 10; supralabials: 14; infralabials 14; circumorbitals 12 and supraloreals 3. *Corallus blombergi* is a medium sized snake with the maximum size documented being 1433 mm SVL in males (FHGO 1074; HENDERSON et al. 2001) and 1910 mm in females (FHGO live coll. 2410).

In the individual collected at Molleturo the numbers of dorsals, ventrals and subcaudals are within the ranges reported by HENDERSON et al. (2001), however, the numbers of infra-loreals and infra-loreals plus loreals (4 and 7 respectively) differ by one scale. Additionally, the coloration of the Molleturo specimen does not represent big brown spots, but numerous (56) circles instead, while other individuals have 43 spots at the most.

The Neotropical treeboa *C. blombergi* inhabits primary and secondary forest and is active at night (19:00–24:00) (MORALES-MITE 2005). Two individuals (FHGO 1572, UDA-AMARU 0019) were encountered active (probably hunting) among vegetation one to three meters above the ground, the rest of snakes (5 specimens) were found in the canopy, in the top of big trees; another individual (FHGO 2410) was found between the branches of a cut tree near the forest floor.

In nature, some individuals were observed trying to capture small bats flying between the branches of trees (RUIZ & VALENCIA 2001). One snake captured (FHGO live coll. 2410), regurgitated a bat (*Carollia castanea*), and the snake's excrements contained rodent remnants not identified yet. When captured, an individual (UDA-AMARU 0019) regurgitated a small bird not identified as well.

The snakes of the genus *Corallus* are ovoviviparous, and little is known about their reproductive biology. A female *C. annulatus* gave birth to seven young, five of which were alive (BLODY & MEHAFFEY 1989). The authors observed the mating in a pair of *C. blombergi* (male FHGO live coll. 1074, female FHGO live coll. 2410) in March 2001 and April 2002. The animals remained in copula through 7 and 3 days, respectively. In the first case the gravid female gave birth to 14 young, after 6 months and 16 days, in the second to 13 young after of 5 months and 2 days. In both cases, the neonates (mean SVL 413 mm, range 300-458 mm, SD 41.3) resembled the mother in color-pattern. At the moment, all youngs are in excellent health condition.

VALENCIA & MORALES (2005), included *C. blombergi* in the IUCN category of "Endangered" (EN) reptiles, based on its rareness and distributional restriction to the fragmented remnants of the West Ecuadorian original rainforest vegetation.

The western lowlands of the Andes of Ecuador are constituted by the Choco region and, to a small extent, the Tumbesian region. Both regions form a great variety of ecosystems, which shelter notable biological diversity and endemism. But at the same time, both areas are considered most threat-

Fig. 2. *Corallus blombergi* (RENDAHL & VESTERGREN, 1940) from Molleturo, Azuay Province, southwestern Ecuador. Photo: Jorge H. VALENCIA.

ened due to uncontrollable destruction of their flora and fauna.

The rainforest is highly fragmented. Less than 8% of the original vegetation cover persists as a result of deforestation and other human activities (MEYERS 1987; DODSON & GENTRY 1993, 1991; GUTBERLET & CAMPBELL 2001). Various anthropogenic activities have a striking impact on the original vegetation and its animal inhabitants: agriculture with its intensive use of soil (banana, palm trees), *Eucalyptus* plantations which replace hundreds of hectares of forest each year, the construction of highways that cross the remnants of the vegetated areas. HENDERSON et al. (2001) concluded that this species is rare in the wild due to the small number of field records and museum specimens. We think that *C. blombergi* must be kept in the IUCN category "Endangered", because of the rapid loss of native vegetation in the western region of southern Ecuador. All known record localities of *C. blombergi* in Esmeraldas, Guayas, Los Ríos and Azuay are separated from each other by large distances which are insurmountable for this snake and most other animal species.

Specimens examined — Esmeraldas: Charco Vicente, Salto Bravo, Río Bravo (FHGO live col. 1074); Reserva Ecologica Cotacachi Cayapas, Pichiyacu (FHGO 1572); Pajonal, Comunidad Gualpí del Onzolé (FHGO live col. 2410); "noroccidente" (FHGO live col. 887, 2822); no specific locality (FHGO live col. 183); Azuay: Molleturo, Comunidad y Reserva Ecológica Flor y Selva (UDA-AMARU 0019).

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REFERENCES: BLODY, D. A. & MEHAFFEY, D. T. (1989): The reproductive biology of the Annulated Boa.- The International Zoo Yearbook, London; 28: 167-172. DODSON, C. H. & GENTRY, A. H. (1993): Extinción biológica en el Ecuador Occidental; pp. 27-57. In: MENA, P. A. & SUÁREZ, L. (Eds.): La investigación para la conservación de la diversidad biológica en el Ecuador. Quito, Ecuador (EcoCiencia). DODSON, C. H. & GENTRY, A. H. (1991): Biological extinction in Western Ecuador.- Annals of the Missouri Botanical Garden, New York; 78 (2): 273-295. GUTBERLET, R. L. & CAMPBELL, J. A. (2001): Generic recognition for a neglected lineage of

South American pitvipers (Squamata: Viperidae: Crotalinae), with the description of a new species from the Colombian Chocó.- American Museum Novitates, New York; 3316: 1-15. HENDERSON, R. W. (1997): A taxonomic review of the *Corallus hortulanus* complex of Neotropical tree boas.- Caribbean Journal of Science, Mayaguez; 33: 198-221. HENDERSON, R. W. (1998): Back to the future: Tree boas, collections and history. Lore. The Milwaukee Public Museum, Milwaukee; 48 (1): 4-10. HENDERSON, R. W. & HÖGGREN, M. & LAMAR W. W. & PORRAS, L. W. (2001): Distribution and variation in the treeboa *Corallus annulatus*.- Studies on Neotropical Fauna and Enviroment, Abingdon; 36 (1): 39-47. MORALES-MITE, M. (2005): Dinámica poblacional de las comunidades de anfibios y reptiles de siete localidades de la zona de amortiguamiento de la Reserva Ecológica Cotacachi-Cayapas, Esmeraldas Ecuador.- B. Sci. Dissertation. Universidad del Azuay. Cuenca, Ecuador; pp. 374. MEYERS, N. (1987): The extinction spasm impending: synergism at work.- Conservation Biology, Boston; 1: 14-21. PÉREZ-SANTOS, C. & MORENO, A. (1991): Serpientes del Ecuador.- Monografie / Museo Regionale di Scienze Naturali, Torino; 11: 1-538. PETERS, J. A. (1957): Taxonomic notes on Ecuadorian snakes in the American Museum of Natural History.- American Museum Novitates, New York, 1851: 3-13. RUIZ, A. & VALENCIA, J. H. (2001): Anfibios, reptiles, aves y mamíferos de la Reserva Ecologicá Mache-Chindul. Plan de Manejo de la Reserva Ecológica Mache-Chindul. Quito, Ecuador (Fundación Jatun Sacha), [Technical Report], pp. 123. VALENCIA, J. H. & MORALES, M. (2005): Boa colombiana o del Chocó (*Corallus blombergi*); pp.18. In: CARILLO, E. & ALDÁS, S. & ALTAMIRANO, M. & AYALA F & CISNEROS, D. & ENDARA, A. & MÁRQUEZ, C. & MORALES, M. & NOGALES, F. & SALVADOR, P. & TORRES, M. L. & VALENCIA, J. H. & VILLAMARÍN, F. & YÁNEZ, M. & ZÁRATE, P. (Eds.): Lista Roja de los Reptiles del Ecuador. Quito, Ecuador (Novo Millenium).

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