

Amphibia, Anura, Cycloramphidae, *Alsodes vanzolinii* (Donoso-Barros, 1974): Rediscovery in nature, latitudinal and altitudinal extension in Nahuelbuta Range, southern Chile

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ABSTRACT: New populations of the Critically Endangered anuran species *Alsodes vanzolinii* (Donoso-Barros 1974) were discovered during two field surveys at Nahuelbuta Range, Biobío region, southern Chile. Adult specimens have not been reported since the original description of the species heretofore. The new records provided herein extend the latitudinal limit of what was previously thought to be the only population of the species 40 km to the southwest, and the altitudinal limit from 25 m a.s.l. to 700 m a.s.l.

Frogs of the genus *Alsodes* Bell 1843 comprise a total of 18 species (Frost 2010), which are distributed in Central and Southern Chile and along the eastern slopes of the Andes range in Argentina (Formas and Brieva 2004). Sixteen species of *Alsodes* inhabits in Chile, four of those distributed in Central Chile (*A. hugoi*, *A. montanus*, *A. nodosus*, and *A. tumultuosus*,) and the remaining in southern Chile (*A. australis*, *A. barrioi*, *A. coppingeri*, *A. igneus*, *A. kaweshkari*, *A. laevis*, *A. monticola*, *A. norae*, *A. valdiviensis*, *A. vanzolinii*, *A. verrucosus*, and *A. vittatus*).

Alsodes vanzolinii (Donoso-Barros 1974) (Figure 1A-B) was originally described as a member of the genus *Eupsophus* Fitzinger 1843. Subsequently, this species was transferred from this genus to *Alsodes* by Formas (1981) based on the specimens used in the original description by Donoso-Barros from the type locality, Ramadillas, Nahuelbuta Range (Figure 2).

Currently, *A. vanzolinii* is considered as a Critically Endangered species by IUCN (2010) and was only reported for the type locality, Ramadillas (Formas 1995; Ortiz and Ibarra-Vidal 2005; Rabanal and Nuñez 2009); it has not been collected any adult specimen since the original description. The last record published of *A. vanzolinii* was made by Formas and Brieva (2004), but based only on tadpoles of one population collected on December 2001 from the type locality. This locality is strongly affected due to forestry activities and human settlement (Rabanal and Nuñez 2009).

During two field surveys conducted on December 10–14 and December 17–20, 2008, in Nahuelbuta Range, Biobío Region (Figure 2), three new population of *A. vanzolinii* were discovered. One population was discovered close to the type locality, in Molino del Sol sector (37°19' S, 73°12' W), 6.5 km southeast of Ramadillas. Only a group of eight tadpoles were collected and compared morphologically with the description of Formas and Brieva (2004) to

ensure the correct determination. The second population was discovered 16 km southeast of Ramadillas, Chauras de Laraquete sector (37°20' S, 73°05' W). One adult specimen (female) was registered and nine tadpoles were collected. The third population discovered, Cuyinco Alto sector (37°39' S, 73°18' W), extends the latitudinal limit of the

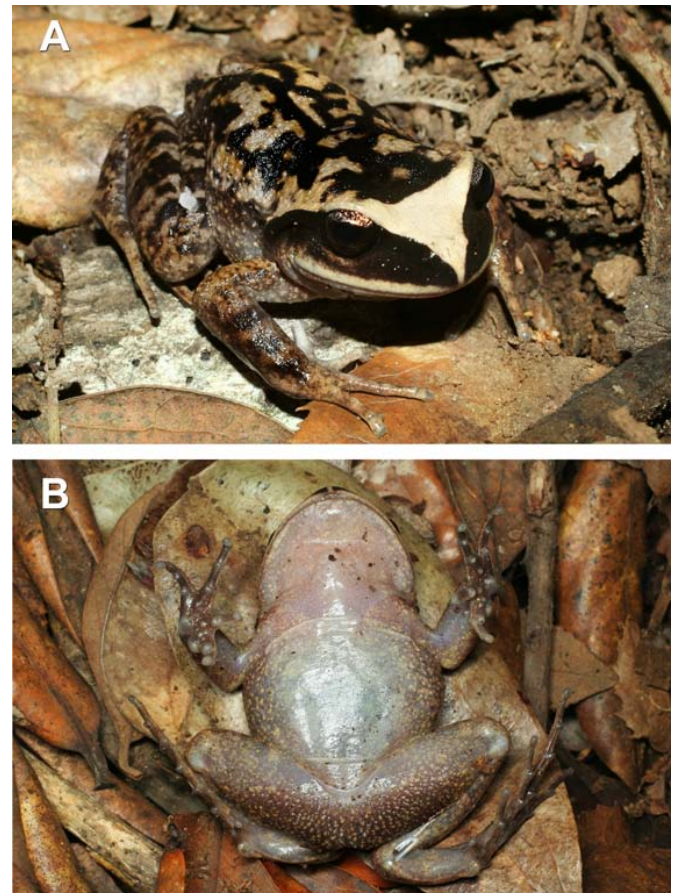


FIGURE 1. Adult female of *Alsodes vanzolinii* photographed in the new distribution area.

species 40 km southwest from the type locality. One adult specimen (female) and 12 tadpoles were collected. The new population of Chauras de Laraquete extends the altitudinal limit of the species to 700 m a.s.l. The formerly only known locality, Ramadillas is located at 25 m a.s.l. The specimens were deposited in the Herpetological Collection of Universidad Austral de Chile (IZUA 3557, 3558, 3559, 3560).

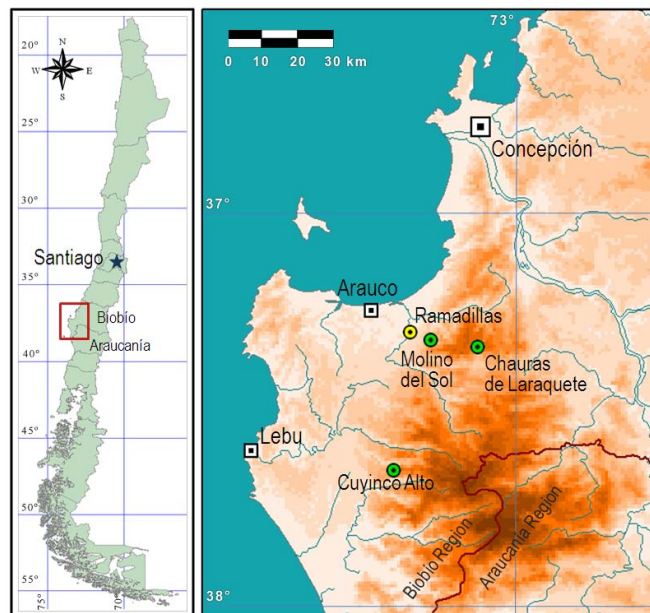


FIGURE 2. Distribution map of *Alsodes vanzolinii* localities in Biobío Region, Chile. Squares: main cities close to the localities. Yellow circle: the only locality known before this survey: Green circles, the recently discovered localities (see text).

The three populations registered during the fieldwork were found associated to ravines in small patches of remnants of mixed native forest mainly dominated by *Nothofagus alpina* (Poep. & Endl) Oerst., *N. dombeyi* (Mirb.) Oerst., *Aextoxicon punctatum* Ruiz & Pav., *Persea lingue* (Miers ex Bertero) Nees and *Weinmannia trichosperma* Cav., enclosed by exotic pine and eucalyptus plantations. The adult specimens were observed walking on the leaf litter at the evening in dry areas covered by plantations (Figure 3B), in both cases distant for several meters (over 100 m) from the bodies of water. The tadpoles were observed swimming in the bottom of small pools of the ravines, in the shadiest areas (Figure 3A).

Both Chauras de Laraquete and Cuyinco Alto areas are being initially managed as high conservation value forests by the owner of the properties, Forestal Arauco S.A. because several endangered plant species grow there like *Berberidopsis corallina* Hook.f. (Alarcón *et al.* 2007). Including *A. vanzolinii* as an additional target for the conservation plans in these areas should be encouraged.

The current records provide an important contribution to the knowledge of the real distribution area of *A. vanzolinii*, one of the most threatened Chilean anuran species due to the habitat destruction and expanding exotic tree plantations. It is highly necessary to increase the effort to further surveys in search of new populations of the species, assessing the conservation status of these and how the plantation managements, like application of herbicides and fertilizers or tree harvest, are affecting them.



FIGURE 3. The two type of landscapes in the new distribution areas of *A. vanzolinii*. A) Ravine in small patch of remnant native forest, B) Exotic tree plantations (pine).

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LITERATURE CITED

- Alarcón, D., C. Smith-Ramírez, P. Hechenleitner, P. Ramírez de Arellano, M. Oliva and M. Pinto. 2007. Nuevas poblaciones de *Berberidopsis corallina* Hook.f. (Berberidopsidales: Berberidopsidaceae) en la Región del Bio Bío, Chile. Ubicación y conservación de su hábitat. *Gayana Botánica* 64(2): 217-231.
- Formas, J.R. 1981. The identity of the frog *Eupsophus vanzolinii* from Ramadillas, Nahuelbuta Range, Southern Chile. *Proceedings of the Biological Society of Washington* 93: 920-927.
- Formas, J.R. 1995. Anfíbios; p. 314-325 In J.A. Simonetti, M.T.K. Arroyo, A.E. Spotorno and E. Lozada (eds.). *Diversidad Biológica de Chile*. Santiago: Comité Nacional de Diversidad Biológica, CONICYT.
- Formas, J.R. and L.M. Brieva. 2004. The tadpoles of *Alsodes vanzolinii* and *A. verrucosus* (Anura: Leptodactylidae) with descriptions of their internal oral and chondrocranial morphology. *Amphibia-Reptilia* 25 (2): 151-164.
- Frost, D.R. 2010. *Amphibian Species of the World: an Online Reference. Version 5.4 (8 April, 2010)*. Electronic Database accessible at <http://research.amnh.org/herpetology/amphibia/>. American Museum of Natural History, New York, USA. Captured on 23 May 2010.
- IUCN 2010. *IUCN Red List of Threatened Species. Version 2010.1*. Electronic Database accessible at www.iucnredlist.org. Captured on 23 May 2010.
- Ortiz, J.C. and H. Ibarra-Vidal. 2005. Anfíbios y reptiles de la cordillera de Nahuelbuta; p. 427-440 In C. Smith-Ramírez, J.J. Armesto and C. Valdovinos (eds.). *Historia, Biodiversidad y Ecología de los Bosques Costeros de Chile*. Santiago: Editorial Universitaria.
- Rabanal, F.E. and J.J. Nuñez. 2009. *Anfíbios de los Bosques Templados de Chile*. Valdivia: Universidad Austral de Chile. 206 p.

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