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PENSOFT

Alsodes vanzolinii (Donoso-Barros, 1974): a new locality in a disturbed habitat for a Critically Endangered species

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Abstract
We report the presence of *Alsodes vanzolinii* (Donoso-Barros, 1974) in the Maule Region, Chile extending its known geographic distribution 160 km north of its type locality. The species was recorded in exotic young plantations of *Pinus radiata* D. Don 1836.

Key words
Maulino Forest; Amphibians; distribution; young pine plantations; conservation.

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Introduction

Alsodes vanzolinii (Donoso-Barros, 1974) is one of the 18 *Alsodes* species present in Chile (Frost 2017). At the time of its description, by the mid-1970s, *A. vanzolinii* was regarded as scarce in the temperate forest of the Nahuelbuta Range, Bio Bío Region (Donoso-Barros 1974). Currently this species is considered Critically Endangered presumably due to massive forest replacement by human settlements and Monterey pine (*Pinus radiata* D. Don, 1836) plantations (Veloso et al. 2010).

The known distribution of *Alsodes vanzolinii* is based on 4 records in the Nahuelbuta Range (Fig. 1): (1) Ramadillas, the type locality; (2) Molino del Sol located 6.5 km southeast from record 1.: (3) Chauras de Laraquete located 16.5 km southeast from record 1; and (4) Cuyinco Alto located 40 km southwest from record 1. These records represent remnants of temperate forests and mature pine plantation (Rabanal and Alarcón 2010). During field sampling at Tregualemu (35°58′ S, 072°44′ W), Maule Region, conducted on a monthly basis from 2014 to 2016, we recorded a total of 5 individuals of *A. vanzolinii* (Fig. 2), extending its known geographic range 160 km north of the type locality.

Methods

We recorded 1 juvenile and 1 adult within a 15 year old *P. radiata* plantation (Fig. 3A) and 3 adults at 2–4 year old pine plantations (Fig. 3B). On average, recorded individuals were located at 237 ± 65 m (mean and standard error) from patches of native forests and 72 ± 32 m from mature plantations of *P. radiata*. These new records expand the geographic distribution of *A. vanzolinii* and are the first documented records outside the Nahuelbuta Range, supporting claims of its presence in Tregualemu (Celis-Diez et al. 2011).

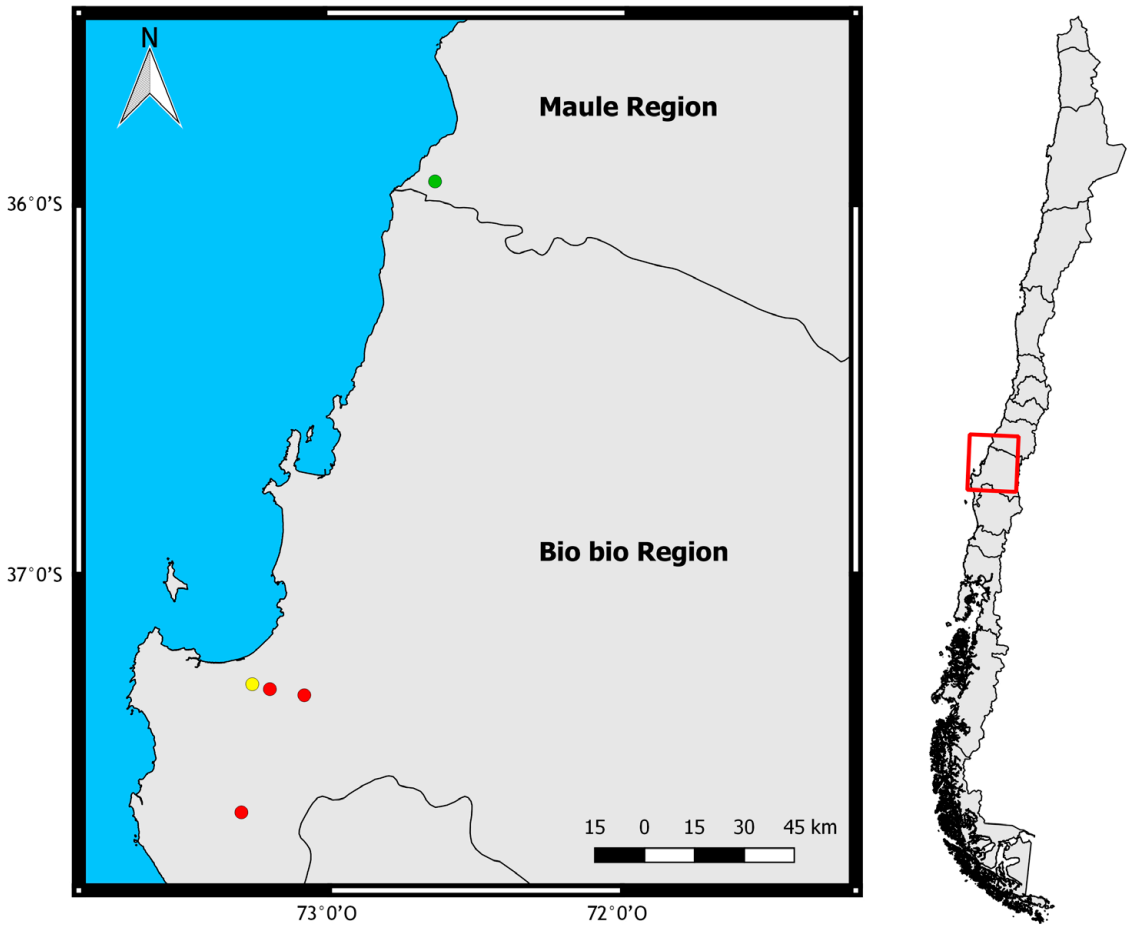

Figure 1. Distribution map of *Alsodes vanzolinii*. Yellow dot represents the type locality: Ramadillas (37°18′ S, 073°16′ W). Red dots represent known records of *A. vanzolinii* at Molino del Sol (37°19′ S, 073°12′ W), Chauras de Laraquete (37°20′ S, 073°5′ W) and Cuyinco Alto (37°39′ S, 73°18′ W). The green dot corresponds to the new records at Tregualemu (35°58′ S, 072°44′ W), Maule Region, Chile. Datum: WGS84.

Figure 2. Individuals of *Alsodes vanzolinii* (not collected) found in Tregualemu, Maule Region, Chile. **A.** Juvenile individual found in mature pine plantation. **B.** Adult individual found in young pine plantation.

Results

New records. Chile, Maule Region, Cauquenes, Tregualemu (35°58.417′ S, 072°43.132′ W), recorded by Soledad Puente-Torres, December 2014, Fig. 3A, adult pine plantation. Chile, Maule Region, Cauquenes, Tregualemu (35°59.986′ S, 072°41.184′ W), recorded by Soledad Puente-Torres, December 2014, young pine plantation. Chile, Maule Region, Cauquenes, Tregualemu (35°59.690′ S, 072°41.002′ W), recorded by Soledad Puente-Torres, May 2015, young pine plantation. Chile, Maule Region, Cauquenes, Tregualemu (35°58.891′ S, 072°42.480′ W), recorded by Soledad Puente-Torres, November 2015, adult pine plantation. Chile, Maule Region, Cauquenes, Tregualemu (35°59.209′ S, 072° 42.387′ W), recorded by Matías Barceló, September 2016, Fig. 3B, young pine plantation.

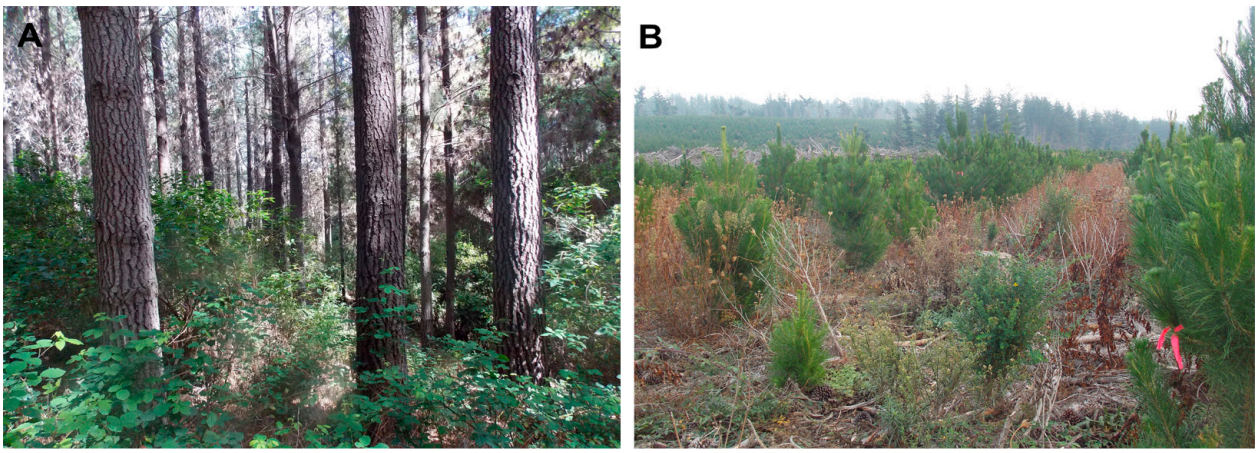

Figure 3. Environments in which *Alsodes vanzolinii* was found. **A.** An adult plantation of *Pinus radiata* with mature understory. **B.** A young plantation of *P. radiata* in Tregualemu, Maule Region, Chile.

Individuals were assigned to *Alsodes vanzolinii* according to diagnostic features, such as rounded snout and head, and head depicting a marked light-yellow triangle which contrast with the face dark brown (Donoso-Barros 1974, Rabanal and Nuñez 2008; identification corroborated by senior herpetologist J.J. Nuñez, Universidad Austral de Chile). Specimens were not collected but photographed for species determination.

Discussion

Records at Tregualemu and those of Rabanal and Alarcón (2010) near Ramadillas confirm that *A. vanzolinii* can use pine plantations as non-native habitat. Whether they are using it for dispersal or as reproductive ground is yet to be assessed. Preliminary evidence suggests that *A. vanzolinii* might use pine plantations as feeding ground. Stomach content reveals that *A. vanzolinii* preys upon a diverse suite of invertebrates including *Valdivium* sp. (Tenebrionidae), a beetle found in mature and young pine plantations (Mansilla 2017).

Several taxa such as ground-dwelling insects, reptiles, mammals, and birds do inhabit pine plantations as long as plantations support well-developed understory vegetation. The presence of such vegetation increases the likelihood of pine plantations to be inhabited by native fauna (see Simonetti et al. 2012 for a review). Besides *A. vanzolinii* other amphibian species, such as *Batrachyla taeniata* (Girard, 1855) (Least Concern, IUCN 2017), *Calyptocephalella gayi* (Duméril & Bibron, 1841) (Vulnerable, IUCN 2017), *Eupsophus septentrionalis* Ibarra-Vidal, Ortiz & Torres-Pérez, 2004 (Data Deficient, IUCN 2017) and *Telmatobufo bullocki* Schmidt, 1952 (Critically Endangered, IUCN 2017) have been recorded in mature pine plantations (Escobar et al. 2005, Puente-Torres and Simonetti 2016). Our records reveal that young pine plantations, an environment usually regarded as a "green deserts", can be used by *A. vanzonlinii*. Besides *A. vanzolinii*, we have only recorded *Pleurodema thaul* (Lesson, 1826) in young pine plantations, a species characterized by inhabiting anthropogenic areas, such as rural zones, where they can be found under rubble and garbage (Rabanal and Nuñez 2008, Celiz-Diez et al. 2011).

Although there is no information about the fitness of *A. vanzolinii* in young pine plantations, its presence in these perturbed environments will require forest managers to adopt practices that favor survival of this endangered species such as enhancing understory vegetation within young pine plantations.

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Authors' Contributions

SPT and MB collected the data, SPT, MB and JAS interpreted data and wrote the text.

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