



A new species of the genus *Alsodes* (Anura: Neobatrachia) from the *Nothofagus* forest, Coastal Range, Southern Chile, identified by its karyotype

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Abstract

Based on morphology, distribution, and on the presence of a novel diploid number ($2n = 30$ chromosomes), a new species of frog *Alsodes norae* from the Coastal Range, Valdivia Province temperate *Nothofagus* forest, Southern Chile, is described. Hypothetical chromosomal rearrangements and the origin of its unusual karyotype are discussed. Among the South American frogs, the genus *Alsodes* is recognized by its complex relationships, and based on karyological and geographical distribution information its species are grouped in two larger groups, herein: the Andean group which is conservative, and the Coastal group which is far more variable in gross chromosome morphology. Additionally, the inclusion of *Alsodes* in the new family Cycloramphidae is commented.

Key words: *Alsodes*, chromosomes, new species, Temperate Forest, Southern Chile

Introduction

Historically, South American frogs of the genus *Alsodes* Bell have been considered a complex assemblage concerning their taxonomy and systematic (see Gallardo 1965; Lynch 1978; Cei 1980; Díaz 1989; Wiens 1993). Recently, Frost *et al.* (2006) re-located it from the Leptodactylidae to the family Cycloramphidae mainly because of molecular characters. Thus, of all members that composed Leptodactylidae only *Eupso-phus* and *Hylorina* remain next to *Alsodes* in the new classification. In this work the new classification is considered and the results are discussed in this framework.

Alsodes is the most diversified taxon present in central and southern Chile (15 spp.). Nearly all species of this genus are micro endemic, inhabiting rheophilic environments associated to the Coastal and Andes ranges (Cuevas and Formas 2001; 2005a). The majority species inhabit within the limits (37° to 48°S) the *Nothofagus* forests in southern Chile [*A. vanzolinii* Donoso-Barros, *A. barrioi* Veloso, Díaz, Iturra and Galleguillos, *A. vittatus* (Philippi), *A. igneus* Cuevas and Formas, *A. valdiviensis* Formas, Cuevas and Brieva, *A. verrucosus* (Philippi), *A. monticola* Bell, *A. australis* Formas, Ubeda, Cuevas and Núñez, *A. kaweshkari* Formas, Cuevas and Núñez]. The rest of *Alsodes* species are restricted to relicts forest in Central Chile such as, palm groves of *Jubaea chilensis*, sclerophyllous woodland [*A. nodosus* (Dumèril and Bibrón), 32° to 36°S], unsteady hygrophYTE forest (*A. hugoi* Cuevas and Formas, 37°S), and Andean spiny scrubs (*A. nodosus*, *A. leavis* Philippi, *A. montanus* Lataste, *A. tumultuosus* Veloso, Iturra and Galleguillos, 32°S).

Alsodes has been diagnosed as lacking a tympanum, by having a xiphisternum of arciferal type, and mainly by a suite of secondary sexual reproductive features of males [thorny structures on the fingers (I and II), round spiny patches on the thumb and chest (Cei 1980; Cuevas and Formas 2001)]. The generic diagnosis makes *Alsodes* a probably monophyletic taxonomic unit, but it also entails a difficult intraspecific resolution (Formas *et al.* 1997; 2002). In this framework, chromosomal criteria have been useful (Veloso *et al.* 1979;