

First Record of Partial Albinism and Scoliosis in *Odontophrynus occidentalis* Tadpoles (Anura: Cycloramphidae).

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ABSTRACT

Albinism has been widely reported for diverse group of vertebrates. However, scoliosis is a rare abnormality. In this work, the first record of partial albinism and scoliosis case in tadpole of the frog *Odontophrynus occidentalis* is being presented. The individual was captured in Quebrada de las Flores, Sierra Pie de Palo, Caucete Department, San Juan Province, Argentina.

Key words: Albinism, Scoliosis; *Odontophrynus occidentalis*; San Juan; Argentina

INTRODUCTION

The albinism is a rare congenital and inherited condition that is characterized by an alteration in the function of dermal pigment via recessive allele expression. Phenotypically, this condition is expressed as an absence or reduction of melanin of the skin, eyes, or hair. A complete lack of melanin produces a condition known as total albinism, but when vestiges of melanin are retained, the condition is termed partial albinism (Klug & Cummings, 1999). Total albinism has been widely reported among the major vertebrates lineages, including cartilaginous fishes, *Mustelus schimitti* (Teixeira & Araújo, 2002), *Rhinoptera bonasus* (Schwartz, 1959), *Dasyatis americana* (Schwartz & Safrit, 1977), *Notorynchus maculatus*, *Raja clava*, *R. naevus*, *R. batis* (Nakaya, 1973) and snakes: *Storeria occipitomaculata* (Watkins-Colwell, 2002) and *Lampropeltis triangulum* (Mitchell & McGranaghan, 2004). Partial and total albinism has also been reported in the snakes, *Coluber logissimus*, *Coronella austriaca*, *Tropidonotus natrix* (Boulenger,

2000), and partial albinism in the worm lizard *Blanus cinereus* (Malkmus, 1997). In amphibians, this abnormality has been reported for the salamander *Ambystoma opacum* (Mitchell & Church, 2002) and *Triturus marmoratus* (Diego-Rosilla *et al.*, 2007), and in frogs such as *Lithobates pipiens* (Federighi, 1938) and *Lithobates catesbeianus* tadpoles (Mitchell, 2005). Scoliosis is a deformation of the spinal column caused by a combination of genetic and epigenetic events that alter the germinal tissues (Hardy, 1964). In amphibians, this deformity is rare, and to has only been observed in *Lithobates pipiens* tadpoles (Hardy, 1964). In this paper the first record of albinism and scoliosis in a tadpole of *Odontophrynus occidentalis* is being presented, which represents the first cases of these deformities for the Argentine herpetofauna.

MATERIALS AND METHODS

On 19 January 2007 in the course of a faunal survey of Quebrada de las Flores, Sierra de Pie de Palo, Caucete

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Department, San Juan Province, Argentina, an *Odontophrynus occidentalis* tadpole (IMCN-UNSJ 5094) were collected. The climate at this locality is arid with spring precipitation (80 mm per year) and marked thermal amplitude. The mean maximum temperature is 25.7 °C and the mean minimum temperature is 10.4 °C. Predominant vegetation is xeric including desert shrubs such as *Prosopis flexuosa*, *Larrea cuneifolia*, *L. divaricata*, and cacti such as *Opuntia sulphurea*, *Tephrocactus articulatus*, and *Cereus aeithiops* (Cabrera, 1994).

RESULTS AND DISCUSSION

The tadpole collected was at developmental stage 41 (Gosner, 1960), 86 mm total length and 34.8 mm maximum width (digital calliper to nearest 0.1 mm). This specimen differs from typically pigmented tadpoles of this species in having a whitish-yellow body. However, this tadpole's eyes were normally pigmented, indicating a case of partial albinism. The normal dorsal coloration of *O. occidentalis* tadpoles is dark brown or olive-green with a transparent ventral body area (Gallardo, 1987).

Albinism occurs as a result of gene alterations, which are predominantly inherited from the parents. Albinism occurs in several forms. It can be inherited when the alleles are autosomal and recessive, autosomal and dominant, or ligated. The Sierra de Pie de Palo *O. occidentalis* population is very isolated and restricted to a shallow stream with a widely fluctuating water volume that is surrounded by desert. If albinism was more prevalent in this population, the expression of this recessive gene might be explained by this isolation and potentially low genetic flow. Most likely, however, this specimen represents a single rare mutation in an otherwise normal population. Scoliosis is caused by an interaction between genes and the environment. Low oxygen and the presence of metals at oviposition sites may cause scoliosis in larval fishes and amphibians (Unrine et al., 2004). The eggs of *O. occidentalis* are deposited individually on the bottom of shallow streams. If this condition was common in this population, it might be explained by the small effective population size and inbreeding, but more likely this represented a mutation that arose during the development of this individual, perhaps as a result of its lack of body pigmentation.

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