

## *Liolaemus Chaltin*

The *Liolaemus anticolor* family, which includes the subspecies *Liolaemus chaltin*, could be among the first species to have two reproductively bimodal populations in a single species. Depending on their specific location and environmental conditions *L. anticolor* could reproduce by live birth known as viviparity or be reproductively oviparous meaning they lay eggs. This is a previously undocumented phenomenon in vertebrates. (Lobo And Espinoza, 2004)

*Liolaemus chaltin* a species of iguanian lizard has a range that is restricted to the Jujuy Providence of Argentina in elevations ranging between 3400-3750 meters. Their body color varies from blue to green with black spots, a fragmented golden stripe down either side of their back and a smooth dorsal head. They vary in size, with an average length is about 55mm. Their average weight is around 0.5 ounces. There are over 225 species in the *Liolaemus* family, but researchers believe there could be many more that have not been distinguished yet. (Lobo And Espinoza, 2004)

This species is primarily carnivores feeding mainly on small insects but can also be found eating seeds from the Fustusa Plant. *L. chaltin* seeks refuge in dense bunchgrass

and short spiny shrubs. The bunchgrass varies in color from brown to golden yellow,



**Figure 1. Bunchgrass is the main habitat for the *L. chaltin* photo credit Fineartamerica.com**

providing good camouflage since *L. chaltin* have a golden yellow stripe down the middle of their back. Their requirement for the bunchgrass and shrubs makes them habitat specialists. (Lobo And Espinoza, 2004)

Taxonomically this species was previously considered to be the same as the *Liolaemus walkeri* of northwest Chile, but recent discoveries including their larger body size, their fragmented vertebral stripe, and a pigmented subocolor (area under the eye socket) is unique to the *L. chaltin*. (Lobo And Espinoza, 2004) These traits have distinguished them as a unique species.

Researchers have discovered variances in the reproductive styles for the *L. anticolor*. In January of 1995 a local Jujuy community member whom was familiar with the *Liolaemus* described identifying *L. chaltin* and reporting it as oviparous. Her information was later confirmed when two captive females deposited eggs in 1996. (Lobo And Espinoza, 2004). This style of reproduction was unexpected for *L. chaltin* for two

reasons, first only three other members of the anticolor group were oviparous, second similar to other *liolameus*, those inhabiting high altitudes tend to be viviparous. The explanation from this distribution pattern called the “cold-climate” hypothesis is that females of viviparous taxa can choose thermal niches that will benefit their young. Alternatively

oviparous species deposit their eggs in underground nests where the eggs are subject to



Figure 3. The range of the *L. chaltin* is restricted to The Providence of Jujuy. Photo credit Zonu.com

unpredictable change regarding their nest environment. Even though *L. chaltin* is found in elevations exceeding 3400 meters it is not viviparous like its sister species *L. multicolor* and *L. ornatus* who are also distributed around the same altitude. When the species produces offspring it is usually 3-4 ovoid eggs during the spring season.

Unfortunately after researching through numerous primary research articles within the University of Washington's database including Academic Search Complete Wildlife & Ecology Studies Worldwide, and Web of Science no articles were found concerning *L. chaltin*'s natural history, or its role in the ecosystem. (Espinoza, pers. comm.) The research on the species is still in its preliminary stages. Further research must be done to develop data regarding key pieces of information about its habitat requirements, trends as well as an evaluation of possible threats the species faces. (Espinoza, pers. comm.) Professors Espinoza and Lobo from California State University have conducted nearly all of the initial research on the *L. chaltin*. After emailing multiple researchers I was able to get in contact with Professor Robert E. Espinoza. During an email interview Professor Espinoza (Appendix 1) discussed that there is still very little known about the species. He concluded that further research must be conducted to determine the species population trends, past and present, habitat loss if any, and its role in its ecosystem. (Espinoza, pers. comm.) Since the *Liolaemus chaltin* is in its early stages of recognition there is very little concrete data to explain what is threatening the species existence and what opportunities for renewed abundance are available. While this may be the case it has been hypothesized that climate change could be a threatening aspect to the survival of the *Liolaemus* species. The increasing temperatures could be changing the cooler habitats the species previously inhabited. This could reduce the range

of the species. They must either climb in altitude to a cooler environment or migrate southward where temperatures are lower, but there are problems that arise when doing this because they can only travel so far due to corridor and fragmented habitat availability, thus they will not be able to migrate long distances from their current locations. Scientists also hypothesize that relocation could be detrimental for them because it changes the competitive nature between themselves and other species in the area.(Lobo And Espinoza, 2004) In addition, *L. Chaltin* is currently oviparous but could become viviparous to adapt and evolve to the climate change, this could cause them to become trapped by their evolutionary adaptation and never return to their previous method of reproduction causing them extreme challenges of ever being able to lay eggs if temperatures decreased again. This would be especially difficult since climate change is altering so rapidly. (Lobo And Espinoza, 2004)

The information that has been gathered for the *L. Chaltin* is insufficient in determining their population status, for this reason they receive the category of data deficient (DD) by the International Union for Conservation of Nature (IUCN). Further research must be done to determine information on their abundance, distribution, predators, and the role *L. chaltin* plays in its ecosystem. Depending on the outcome of further research a conservation plan could be developed to ensure the *L. chaltin* remains a part of its ecosystem.

**Work Cited:**

1. Lobo, Fernando, and Robert E. Espinoza. "Two New *Liolaemus* from the Puna Region of Argentina and Chile: Further Resolution of Purported Reproductive Bimodality in *Liolaemus alticolor* (Iguania: Liolaemidae)." *Copeia*. (2004): 850-867. Web. 16 Mar. 2014. <<http://www.csun.edu/~ree77914/web.pdfs/chaltin.puna.Copeia.pdf>>.
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3. Rowell, Bob. *Bunchgrass*. N.d. Photograph. [www.FineArtAmerica.com](http://www.FineArtAmerica.com) Web. 19 Mar 2014.
4. *Jujuy\_Province\_Map\_Argentina*. N.d. Photograph. [www.zonu.com](http://www.zonu.com) Web. 19 Mar 2014.
5. Espinoza, Robert E. California State Northridge. [robert.e.espinoza@csun.edu](mailto:robert.e.espinoza@csun.edu) Plant and Animal Scientist. E-mail Interview. 12 Mar 2014.

## **Appendix 1:**

March 11, 2014

Hello professor,

I read an article you wrote discussing the *liolaemus chaltin* and bimodality. I was wondering if you had any research you could share with me on that species.

I am looking for things such as:  
Specific Home range  
Habitat loss data  
Conservation plans  
Predators  
Natural history  
Population status  
Role the species plays in its ecosystem

I am writing a paper for a class and have not been able to find much information about it beside your research. Can you provide me some more information?

Thanks for your time,

Mehrgon Sanayei  
University of Washington

March 12, 2014

Hi Mehrgon,

I doubt you will find much information on this species because it has not been studied for most of the traits you list below. Most of the natural history information available for it is published in the paper you read. There have been a few studies of related species that may mention this one, but I don't think anyone else has studied it in any detail.

Dr. Fernando Lobo, Universidad Nacional de Salta, Argentina might have more information. You can email him at: [flobo@unsa.edu.ar](mailto:flobo@unsa.edu.ar).

Best wishes,  
Bobby