



**1) Title of Project:** Guanajuato Program for the rescue of the Big-footed Leopard Frog (*Lithobates megapoda*)

**2) Project leaders:**

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**3) Amount Requested:** \$5,000.00 USD

**4) Executive Summary.** Given the situation that amphibians face nowadays and the little study that exists in their regard in the state of Guanajuato, Mexico; the Leon Zoo decided to join the amphibian conservation efforts worldwide. We intend to do this by developing a Conservation Program that includes the creation of efficient protocols for ex situ breeding and husbandry, mitigation of the identified threats that this species face, and working along with the community about the importance of conservation and protection of the the Big-footed Leopard Frog (*Lithobates megapoda*) – species classified as vulnerable (IUCN, 2017), in special protection in the Mexican Standard "NOM-059-SEMARNAT", and also listed as rescue species by the Amphibian Ark (Mexican Amphibian Conservation Needs Assessment, 2008).

The criteria for selecting this species as a candidate were the following:

1. Species that inhabit the state of Guanajuato.
2. Aforementioned species have viable populations.
3. Aforementioned species are in the list of AArk rescue role.
4. Collaborate with the community to preserve the habitat.

The Amphibian Ark funds will help start the project and obtain the necessary equipment and materials that will be required in the ex situ conservation laboratory.

We will maintain and breed the animals in aquaterrariums, inside a building specially designed for it. Additionally we will have an exhibition area for our visitors to get to know the species.

The main problems that the Big-footed Leopard Frog (*Lithobates megapoda*) faces in the wild is the destruction of its habitat and the introduction of exotic species such as the Bull Frog (*Lithobates catesbeianus*). During this project, we will develop successful husbandry and breeding protocols that will allow us in the future and once we have managed to mitigate the threats together with the community and the corresponding authorities, to supplement depressed current populations and to reintroduce the species in areas where it existed once,

Additionally, we are working on developing an educational program for the selected species (*Lithobates megapoda*) and also for the Bell's False Brook Salamander (*Isthmura bellii*) as it has been detected that the populations of this species have decreased.

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**5) Introduction:** The Big-footed Leopard Frog (*Lithobates megapoda*)(Taylor, 1942) has been of great cultural and economic importance for the Guanajuato populations, since from pre-hispanic times its meat was consumed since it is a large species.

The species is distributed in the south of the state of Guanajuato, south of Nayarit, west of Jalisco and north of Michoacán. The Big-footed Leopard Frog is a species which populations have been reduced considerably because of different threats, including the change of land use, predation for consumption, water pollution and degradation of its habitat (Santos-Barrera and Flores-Villela, 2004) along with introduction of exotic species such as the Bull Frog (*Lithobates catesbeianus*). Water pollution is derived from the heavy industry existing in the state of Guanajuato and the indiscriminate cutting of trees for the production of coal and brick is degrading its habitat that has diminished importantly in all its distribution area. It was formerly a very common species but has had a recent decline in its populations, mainly south of its range, as indicated by the IUCN Red List

<http://www.iucnredlist.org/details/58662/0&prev=search>

The species inhabits mainly permanent lakes, rivers and ponds in scrubland and pine and oak forests.

The Leon Zoo designed an educational campaign in 2008, which allowed visitors to know the different amphibian species of Guanajuato, putting special attention in the crisis that this group of animals face by presenting the work of the Amphibian Ark in massive events within the state. We reactivated and improved such campaign in 2017 thanks to an area we recovered from the zoo where we currently display amphibians. In this area we have a special emphasis in regional species in order to strengthen the conservation project of the Big-footed Leopard Frog (*Lithobates megapoda*) as well as the fact of its importance for the environment, inviting the public to donate for this purpose.

In order to achieve our goals we will reuse and modify existing facilities within zoo-grounds, we will develop protocols that could also be applied to other similar species and increase the knowledge about its biology and its conservation, with the following objectives:

**General Objective:**

- Develop and sustain the first integrated (*ex situ* and *in situ*) conservation program of the Leon Zoo, for the captive breeding of critically endangered species of Guanajuato and where we will work closely with the communities in order to procure the conservation of the Big-footed Leopard Frog (*Lithobates megapoda*).

**Specific Objectives:**

- Provide conditions for captive breeding of the Big-footed Leopard Frog (*Lithobates megapoda*).
- Create an educational program with the communities located within the area of the natural distribution of the selected species, in order to ensure their commitment to the care of the habitat and the species.

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- Produce statistical data and efficient protocols.
- Reintroduce the offspring of the Big-footed Leopard Frog in the future.
- Develop protocols that allow other related institutions to join conservation efforts for other species located in their region.
- Mitigate the threats that are causing the decrease of the Big-footed Leopard Frog (*Lithobates megapoda*) wild populations.

**6) Methodology:** The project will be carried out within the Leon Zoo facilities, ensuring the highest biosecurity standards established by the Amphibian Ark. We have an area of more than 115 square meters of construction that, with the pertinent modifications, will contribute to the compliance of the necessary standards. Also, we will design an exhibition area for educational purposes that will allow our 700,000 annual visitors to learn more about the project and its scope. Within the facility we will use 2 shelves of 4 levels, with the capacity to hold 10 terrariums of 40 liters per line to maintain the specimens. We will also build a system of breeding ponds with filtration that will allow an intensive and controlled breeding of the specimens, with a double containment system to avoid leaks.

A filtration system of micro and macro particles will be installed, with activated charcoal and porcelain that will allow to have the water in optimal conditions for the amphibians in all the enclosures and will maintain temperatures of 20 C° and environmental relative humidity of 70%.

Also, we have a specific area in which we will breed crickets (*Acheta domesticus*) and fruit fly (*Drosophila melanogaster*), we are also looking forward to breed the crustacean *Artemia salina*, earthworms (*Lumbricus sp.*) and underwater plants such as the *Elodea sp.* in order to offer the specimens a variety of food close to what they consume in the wild.

The biosecurity will be the column of the project; we will implement independent footwear and sanitary carpets impregnated with Fractal to enter to the facilities. Also we will have dedicated coveralls, buckets, containers and materials exclusive to the area, as well as double doors with automatic closing are contemplated.

With the help of the University of de la Salle Bajío and ITESI, we will carry out necessary studies and analyzes in the laboratories of these institutions.

We will collect a total of 100 adult individuals, 30 males and 70 females, as founder group. All the collection will be carried out with the corresponding permits issued by the General Directorate of Wildlife (SEMARNAT).

The company Aquanimals will provide training on intensive breeding of leopard frogs in captivity from July to August, as they are dedicated to breeding similar species, bullfrog (*Lithobates catesbeianus*) and leopard frog (*Lithobates pipiens*), using their experience in favor of our conservation program.

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## 7) Budget

Budget category	Item/amount	Requested to AArk	Other sources/status
<b>FIELD STUDY</b>	Gas, tollways and others	\$0.00	\$500.00 and vehicle from the Guanajuato Government
	Food for 4 people	\$0.00	\$200.00 Leon Zoo
	Lodging	\$0.00	\$100.00 Leon Zoo
	Field Guide	\$0.00	\$100.00 Guanajuato Government
	Bus (Biologist Gustavo)	\$0.00	\$60.00 Leon Zoo
	Field samples collecting materials (water, soil, etc)	\$0.00	\$150.00 De la Salle Bajío University and/or Politécnico
	Specimen collecting materials	\$0.00	\$200.00 AZA
<b>FIELD STUDY TOTAL</b>		<b>\$0.00</b>	<b>\$1,210.00</b>
<b>EX – SITU FACILITIES</b>	Existing building remodeling	\$1,000.00	\$6,000.00 AZA (in process)
	Air conditioner	\$690.00	\$0.00
	1 keeper salary	\$0.00	\$5,500.00
	Electricity Generator	\$1,000.00	\$0.00
	Filter System	\$720.00	\$0.00
	Sanitary mats and solutions	\$100.00	
	Disposable powderless gloves, coveralls and mouth masks.	\$230.00	\$0.00
	Live food harvesting material	\$600.00	\$0.00
	Material for 40 aquariums, \$9.00ea.	\$360.00	\$0.00
	Buying live food for breeding	\$300.00	\$0.00
<b>EX – SITU FACILITIES TOTAL</b>		<b>\$5,000.00</b>	<b>\$11,500.00</b>
<b>EDUCATION</b>	Graphics and promotions	\$0.00	\$1000.00 requested to AZA
	Community work and education program (10 educators)	\$0.00	\$65,286.66 Leon Zoo
	Commutes to community	\$0.00	\$1,200.00 Leon Zoo
	Info outreach	\$0.00	\$500.00 Leon Zoo
<b>MITIGATION OF THE THREAT</b>	Reforestation program	\$0.00	\$5,000.00 municipal tree nursery
	Exotic specimens capture	\$0.00	\$5,000.00 requested to AZA
	Community work program	\$0.00	\$6,000.00 requested to AZA
<b>MITIGATION OF THE THREAT TOTAL</b>		<b>\$0.00</b>	<b>\$16,000.00</b>
<b>TOTAL GENERAL</b>		<b>\$5,000.00</b>	<b>\$28,710.00</b>
<b>PERCENTAGE</b>		<b>14.8%</b>	<b>85.2%</b>

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**8) Activities timeline:**

<b>ACTIVITY</b>	<b>FEB – MAY 2017</b>	<b>JUL-AUG 2017</b>	<b>AUG - OCT 2017</b>	<b>NOV - FEB 2018</b>	<b>MAR – JUN 2018</b>
Legal procedures with authorities and development of agreements with institutions involved.	<b>X</b>				
Remodeling and adaptations of the area			<b>X</b>		
Construction of ex-situ breeding lines			<b>X</b>		
Aquanimals training		<b>X</b>			
Field work		<b>X</b>	<b>X</b>		
Field collection			<b>X</b>		
Educational Program in community			<b>X</b>	<b>X</b>	
Educational Program in Zooleon				<b>X</b>	
Research and statistics				<b>X</b>	<b>X</b>

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León, Gto, April 28 , 2017

To whom it may concern,

The Leon Zoo is an Institution committed to fostering the conservation mission that drives all high standard entities within the conservation community.

In view of the above, I am pleased to communicate our support to their new Conservation Program: "The Guanajuato Program for the rescue of the Big-footed Leopard Frog".

We will work together with the Zooleón to achieve the goals and targets set to comply with the Amphibian Ark standards.

With nothing further at the moment I remain at your service.

Sincerely,



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## CONSERVACIÓN DE LA BIODIVERSIDAD DEL CENTRO DE MÉXICO, A.C.

Aguascalientes, Aguascalientes, a 15 de Marzo de 2017  
ASUNTO: Support Letter  
No. de Oficio: 03/03/2017

León, Gto, March 15, 2017

To whom it may concern,

The Leon Zoo, as an accredited member of the Association of Zoos and Aquariums, is committed to fostering the conservation mission that drives all AZA Institutions and to support the efforts directed to spread the conservation message.

Therefore, this time we are pleased to support the new Conservation Program: "The Guanajuato Program for the rescue of the Big-footed Leopard Frog".

For this we will work together with the Zooleón to achieve the goals and targets set it to comply.

With nothing further at the moment I remain at your service.



ATENTAMENTE



M. EN C. GUSTAVO ERNESTO QUINTERO DIAZ  
PRESIDENTE BIODIVERSIDAD A. C.

Ccp. Archivo.

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