



Supatá's Golden Frog Project: Conservation of new amphibians in Colombia.





Central square of Supatá town

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Supatá's Golden Frog Project: Conservation of new amphibians in Colombia

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Tree planting day by "Cuida Palos" near a water body

SUMMARY

For more than three years, the Ecodiversidad Colombia foundation has been developing diverse environmental, community involvement and scientific research activities framed under Supatá's Golden Frog project that has as overall objective to develop a local conservation initiative that contributes to the amphibian conservation in the municipality of Supatá. This project is one of the best opportunities that have arisen in the region to involve the local community in the conservation of their natural heritage, using the amphibians as flagship species to achieve it. As key result of this project is the active participation of the Supatá community (mostly children and young people), in the different activities which have allowed them a better understanding about the need to conserve their environment as a way of ensuring a better quality of life for all. With regard to research, a population monitoring of the Supatá's golden frog allowed to compile the first ecology data and demographic parameters of this frog, and one most complete herpetofauna inventory was performed in different areas of the municipality, which contributes to the knowledge of the amphibian and reptile diversity in this area of the country. All data collected during this project will have a huge impact on the future decisions that must be taken for the conservation of the species involved here.



Photo: Jennifer Del Río

INTRODUCTION

According to the Global Amphibian Assessment, Colombia has the second-highest amphibian diversity in the world; however, 208 Colombian amphibian species are listed as threatened due to different factors like the climate change, emergence of infectious diseases and habitat loss (Stuart *et al.*, 2004). Regarding this last threat, the current situation of the Colombian Andean forests is so worrying; it is estimated that more 70% of their original extent have disappeared or have been transformed, leading to the brink of extinction of a large number of species including amphibians species.

Supatá is located in the Cundinamarca department, to the northwest of the Colombian capital in the western slope of the Eastern Andes (Figure 1). The municipality has elevations ranging from 1100 to 3500 meters above sea level. The landscape is characterized by a mosaic of small patches of Andean forest, surrounded by grassland areas for livestock grazing and agriculture. The area presents temperatures between 18 and 24 °C with annual rainfall exceeding 2,000 mm.

Currently, Supatá has 127.7 km² of land and only 13% are covered by isolated Andean forest relicts, which are being progressively destroyed by several human activities. These forest patches have shown to have a high significance for the amphibian diversity: in one of these fragments of less than two hectares of forest was found two new species of dendrobatid frogs (*Andinobates* "supatae" sp. nov. and *Hyloxalus* sp. nov.) and was reported the second population of an endangered Andean salamander (*Bolitoglossa pandi*) (Acosta & Gutierrez, 2012). Also these patches are the great importance to the conservation of others endangered species that have been reported in Supatá such as three bird species and one palm species.

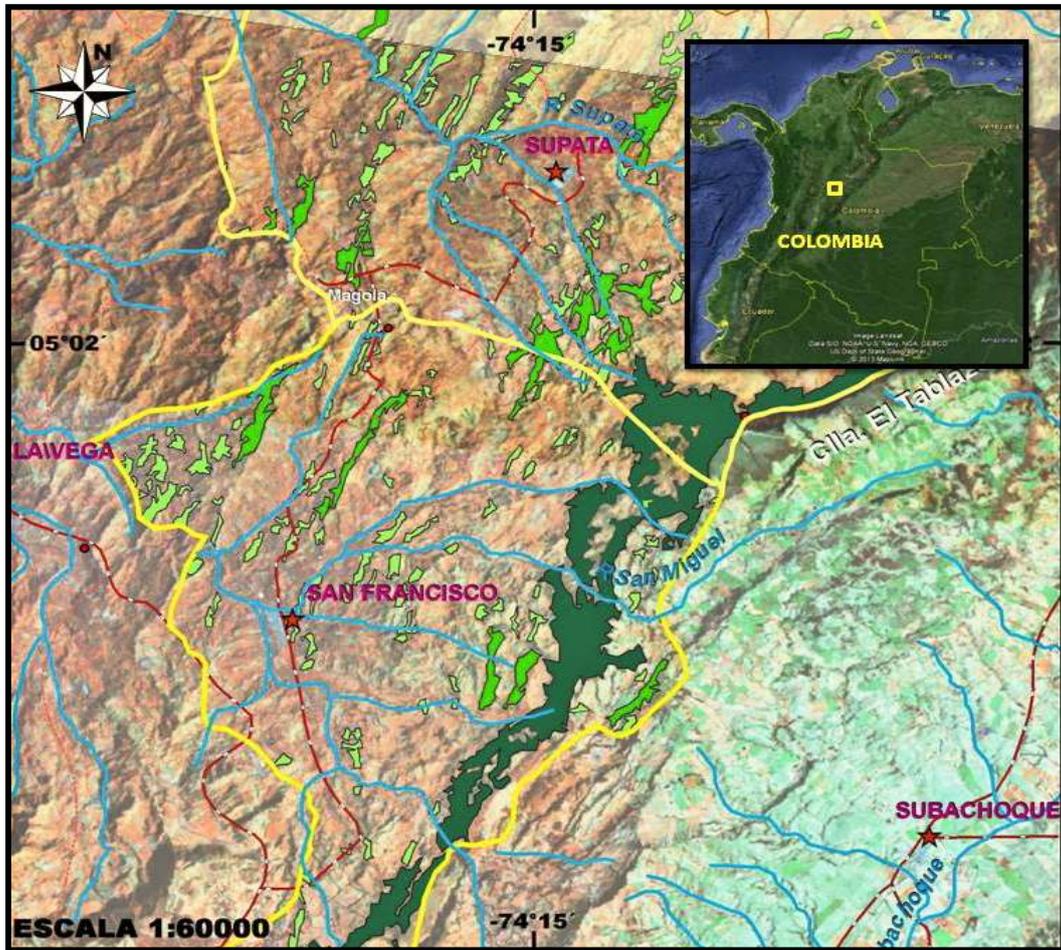


Figure 1. Location of the study area. The light green areas make reference to the remnants of cloud Andean forest (Source: Conservation International Colombia, 2007).

To assure the conservation of these forest relicts (habitat of these amphibians), is necessary to reverse the unsustainable use that the local community makes of the forest resources. This can be achieved increasing the local awareness about the importance of the role of the local people have like key implementers in conservation actions. In this context, this project arose as answer to the opportunity to involve the Supatá community in the nature conservation, through the building of a conservation awareness where the scientific knowledge, the environmental sensitization, the adequate natural resource management and the appropriation of nature are its main pillars.

Diverse groups and persons worked actively in the planned activities on this project, especially “Cuida Palos” environmental children's group, the teamwork of Supatá town hall and several environmental leaders from the town. One of the most relevant events were the Supatá’s Golden Frog festival which is held every year early December and where hundreds of people gather to celebrate the nature conservation through sport, art and recreation. The other significant event that was carried out with great success was the first athletic race “Supatá’s Golden Frog” that was attended by over 250 athletes of all ages who ran by the conservation of this flagship species.

Due to its relevance and impact within the local community, and the level of involvement and participation reached, these events can be considered as one the most important achievements in this conservation project.



Supatá’s Golden Frog flower arrangement that won the first place in a regional competition.

PROJECT TEAM



Giovanni A. Chaves Portilla (34)

Role in the Project: Leader Team – Field researcher

Experience and interests: Giovanni has been involved in several conservation projects, mainly of Colombian birds and amphibians. His interests are focused to the biology conservation, ecology and natural history researches with amphibians.



Jenny P. Gallo Santos (30)

Role in the Project: Co-investigator – Community facilitator.

Experience and interests: Her interests are focused in mammal research and the community work. Jenny has been involved in different conservation project and researches with large mammals.



Astrid Nossa Pardo (30)

Role in the Project: Co-investigator- Field researcher

Experience and interests: She is interested in the environmental management and conservation biology. Since 2007 with Ecodiversidad Colombia foundation has developed several programs and conservation projects.



Nidia Rodriguez (28)

Role in the Project: Co-investigator – Community facilitator and field assistant.

Experience and interests: The Nidia's interests are focused to the environmental education and capacity building. With Ecodiversidad Colombia foundation has worked in three conservation projects since 2007.



Sergio O. Pulido (33)

Role in the Project: Co-investigator- Field researcher

Experience and interests: Sergio beside the Ecodiversidad Colombia Foundation has developed for more than five years diverse conservation projects in the Colombian Andes. Sergio's interests are focused in the environmental management and ecosystem services.



José D. Gil Acero (32)

Role in the Project: Co-investigator-Field researcher.

Experience and interests: His interests are focused in the amphibian research especially about the ecology of these animals. José has been involved in three amphibian conservation project with Ecodiversidad Colombia foundation.



Name: Fabián Tavera Beltrán (35)

Role in the Project: Co-investigator – Community facilitator and field assistant.

Experience and interests: Fabián has supported for several years conservation projects of fauna and flora from the Colombian Andes. He is interested in the biology and ecology of the bryophytes, and the conservation work with local communities



Performance in the third Supatá's Golden Frog festival

AIM AND OBJECTIVES

The main aim of the project was to develop a local conservation plan, which allow achieve significant impacts that contribute to the protection of the new species of amphibians and their habitats in the municipality of Supatá.

To meeting this aim, were set out the following objectives:

- To provide the necessary tools to reach an active participation of the Supatá community in the protection of the local amphibians and their habitats, through of the implementation of different environmental activities.
- To perform a population monitoring of the Supatá's Golden Frog and carry out ecological and natural history studies, that allow to understand its current conservation status.
- To initiate a reforestation plan with the local participation that allows the interconnection of several forest patches, to increase the habitats of focal amphibians species.

With respect to the latter objective, the reforestation plan extended its reach to the protection of watersheds and micro-watersheds in this area, because this is an issue of concern for the local people that supply water to these water sources. We must emphasize that this goal was met only the early stages due to different setbacks that arose with a few landowners in where are some important forest relicts or watersheds.

METHODOLOGY

Amphibian monitoring: The focal amphibian population were monitored using the standardized method, visual encounter survey (VES) of medium intensity (Crump & Scott 2001; Lips, *et al.* 2001; Angulo *et al.* 2006), every month (six months), in five forest fragments with similar characteristics, which were selected using aerial photos was recorded the field data to estimate relative abundances, population structure, natural history and other ecological aspects.

Herpetofauna Inventory: To increase the knowledge about the amphibian and reptile diversity in this part of the country, were conducted several field surveys in diverse areas of the municipality with different altitudinal gradients, habitats and vegetation types, allowing compile the first checklist of the herpetofauna of Supatá. The method used in these surveys was free search without time constraint (Angulo, *et al.*, 2006). All individuals found were measured and weighed with a caliper of 0.1 mm of precision and a digital gram scale 500g, respectively. In addition to these measures, also was recorded the microhabitats where the individuals were found, date and time of capture, and categorized by sex and age.

The information obtained in these field surveys is being collected in an illustrated field guide, which is expected to be published on the fourth quarter of 2013 or first quarter of 2014.

Local community work (figure 2): Diverse activities and actions were conducted to involve the community of Supatá in the project. The most important was the accomplishment of the Environmental Leadership School with children and adults that were trained with the environmental primer "Sowing the Future Environment" in diverse environmental issues. Furthermore, several informative meetings and workshops were held with the participation of the representatives of the local authorities, environmental leaders and stakeholders, in which specific issues relative to the environmental problems that affect the amphibians in the municipality, project advances, organization of the Supatá's Golden Frog festival and other conservationist topics, were discussed.

Finally, to strengthen these educational and environmental activities, was designed and distributed different types of educational materials (posters, flyers, booklets, etc.).

Reforestation plan: The first phase of this plan was to hold meetings with the farmers that possess in their lands forest fragments and watersheds to establish agreements and permits to take up the reforestation. The second phase was to establish the tree nurseries through the seed collection and the planting of juvenile plant of native species from the area. And a third phase was the planting trees and caring for these by the local community and members of “Cuida Palos” environmental children's group.



Environmental billboard set by the town hall in the central square of Supatá that says: “Take care of our Environment - In our hands is the power to save the nature and save ourselves”

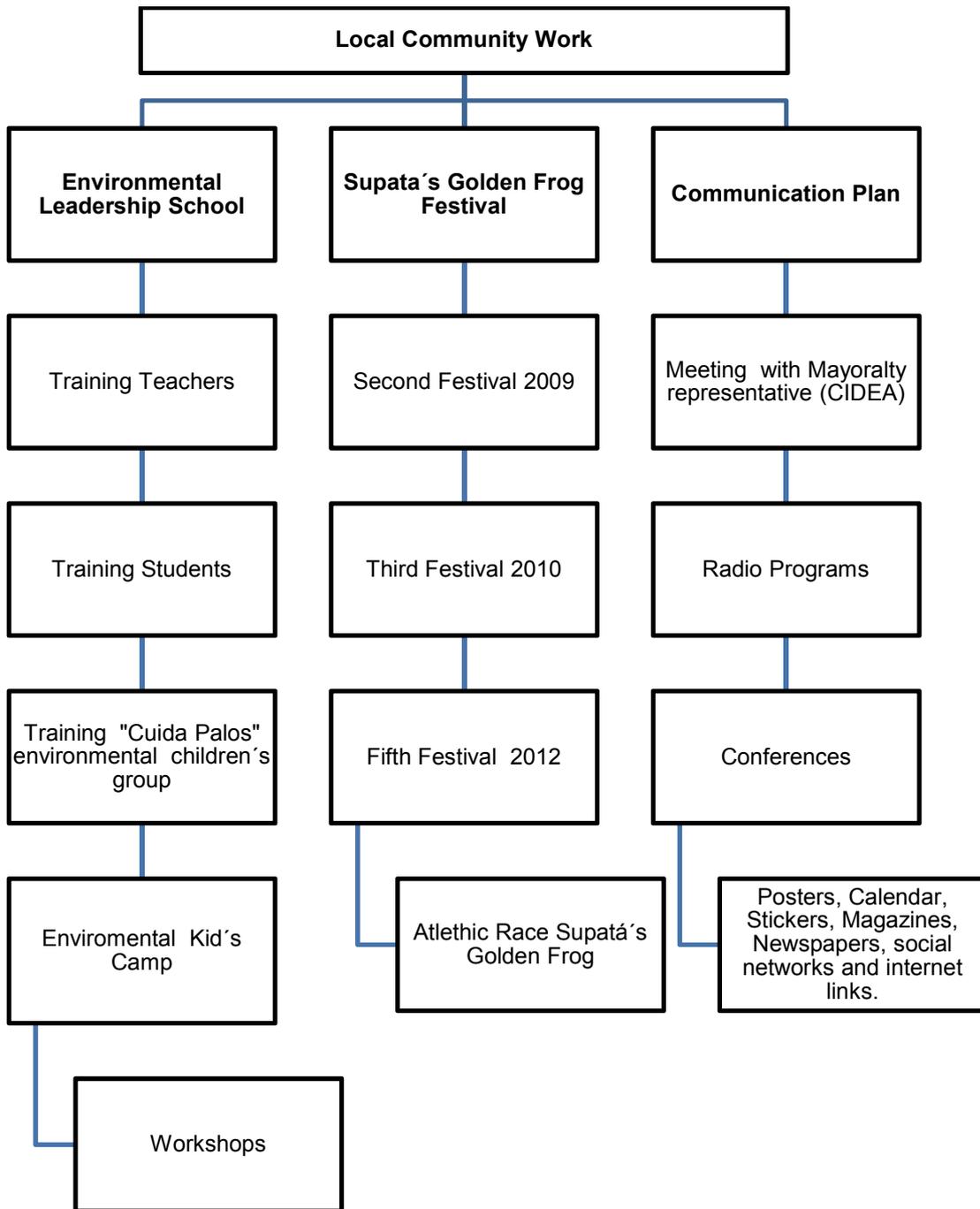


Figure 2. Local community work developed within the Supatá's Golden Frog project.

OUTPUTS AND RESULTS

Local community work outputs:

The Environmental Leadership School: This program sought to train children, young people and adults in the formation of a critical thinking around the environmental protection and the appropriate use of natural resources within the municipality. A large participation was achieved with the students of the educational institutions of Supatá and the members of “Cuida Palos” environmental children’s group. Workshops, talks and diverse play and outdoor activities, were carried out in this program to finish in a graduation of the new environmental leaders (Table 1 and figure 3, 4 and 5).



Figure 3. Kid’s camp performed within the Environmental Leadership School activities. 25 children and 5 adults participated for three days of this outdoor activity.



Figure 4. Children and young people participating in an environmental workshop, near to the natural habitat of the Supatá's Golden Frog.



Figure 5. Outdoor hike with members of "Cuida Palos" environmental children's group in a cloud forest remnant.

The program required a high commitment from teachers who received a prior training and of the students who completed the entire program with the assistance of the environmental primer designed for this purpose (Figure 6).



Figure 6. A prior training were performed to some teachers of Supatá (left) and members of “Cuida Palos” children’s environmental group developing diverse activities in the environmental primer "Sowing the Future Environment".

Table 1. People who participated in the Environmental Leadership School

Activity	¿How many times?	Approximate number of participants
Training Teachers and community leaders	2	40 adults
Training students	10	80 children and young
Training Cuida Palos Environmental children’s group	2	25 children
Environmental kid’s Camp	1	25 children 5 adults
Workshops	6	115 adults
TOTAL		130 children 160 adults

The Supatá’s Golden Frog Festival: With the development of the second edition of the Supatá’s Golden Frog festival in 2009, this event started to organize like a local initiative with the major support from the mayoralty of Supatá and Ecodiversidad Colombia

foundation. Nowadays, this event has established like one of the most important in the Supatá festivities (table 2). Besides the great environmental impact, this annual event has shown to have a significant impact in the socio-cultural component of this community, because it has boosted the tourism and somehow the municipality's economy, through the generation of new revenue during the development of the event.

Table 2. The three editions of the Supatá's Golden Frog festival where the Ecodiversidad Colombia foundation has supported the event.

Activity	¿How many days?	Approximate number of participants
Supatá's Golden Frog Environmental Festival 2009	2	250 children, 300 adults
Supatá's Golden Frog Environmental Festival 2010	2	180 children, 350 adults
Supatá's Golden Frog Environmental Festival 2012	3	220 children, 400 adults
Athletic Race Supatá's Golden Frog 2012	1	50 children, 200 adults
TOTAL		700 children 1250 adults

During 2011 the our foundation pulled away of the organizational process for the fourth edition of this festival to evaluate the ability of the local community to organize the event without the presence of one of its biggest promoters, and with great satisfaction was concluded that not only the festival is now a year-end tradition of the municipality, but that especially young people of Supatá took the lead in the organization of this edition. In the five occasions that has carried out the Supatá Golden Frog festival, people of all ages have led lively and colourful parades through the town to promote nature conservation and sustainable natural resource use (figure 7). Likewise there were numerous side-events such as traditional dancing, theater, sports and painting competitions to raise environmental awareness and keep people entertained (figure 8). Alive specimens of Supatá Golden Frog and other amphibians were also displayed offering many people the chance to see this rare frog for the very first time (figure 9).



Figure 7. Seniors parading in clothes made with recycled materials in third festival (above), and “Cuida Palos” environmental children’s group parading in second festival (below).



Figure 8. Diverse play and environmental activities performed in the five editions of the Supatá's Golden Frog festival. Painting competition, tree planting day, traditional dancing, races and allegorical floats made by the kids.



Figure 9. Nidia showing the Supatá Golden Frog (above). The surprise face of a kid when see for first time the Supatá Golden Frog (below).

As part of the fifth festival (2012) was held the first athletic race Supatá's Golden Frog, this race sought to unite through sport to the local community and visitors around the conservation our flagship species (figure 10), approximately 250 people, including children, youth and adults ran in one of the most important activities in this festival.



Figure 10. Moments of the first athletic race Supatá's Golden Frog, where professionals and amateur athletes ran around the conservation of this emblematic frog.

Media Dissemination: A number of activities were held to disseminate in the media te information about this project. In January of 2010 was created a radial program called "Ambiente Eco-lógico" (Eco-logic environment), which is transmitted in the Supatá radio station every Saturday between 5:00 to 6:00 am (to listen online please visit www.supata.com), where members of Ecodiversidad Colombia foundation talk over

diverse environmental issues that present in the region, make interviews and promote the nature conservation (figure 11).



Figure 11. Jenny and José in “Ambiente Eco-lógico” radio program.

Likewise we have held talks and workshops to inform on the activities of the project and there have been press releases in national newspapers for the same purpose (figure 12).



Figure 12. Press release about the second of Supatá’s Golden Frog festival in a national news paper (left); meeting with local leaders and members of local government (right).

Amphibian Population Monitoring: In total 6 samplings were conducted between November 2009 to April 2010, in five forest fragments within Supatá (Table 3). Moreover, explorations were performed in many of the forest fragments present in Supatá to record the presence / absence of the species, and we visited other nearby areas with similar characteristics, to find this species, but it was impossible find it in other places besides the already known (figure 13).

Table 3. Amphibian population monitoring performed in five could forest relicts in Supatá

MONTH	RECORDED FROG					ENCOUNTER RATE (FROGS/HOUR)				
	FOREST 1	FOREST 2	FOREST 3	FOREST 4	FOREST 5	FOREST 1	FOREST 2	FOREST 3	FOREST 4	FOREST 5
NOVEMBER	16	12	18	15	20	2	1.5	2.25	1.87	2.5
DECEMBER	12	10	15	9	16	1.5	1.25	1.87	1.12	2
JANUARY	12	13	18	12	19	1.5	1.62	2.25	1.5	2.37
FEBRAURY	14	12	13	10	17	1.75	1.5	1.62	1.25	2.12
MARCH	17	15	14	14	22	2.12	1.87	1.75	1.75	2.75
APRIL	13	13	17	11	16	1.62	1.62	2.12	1.37	2

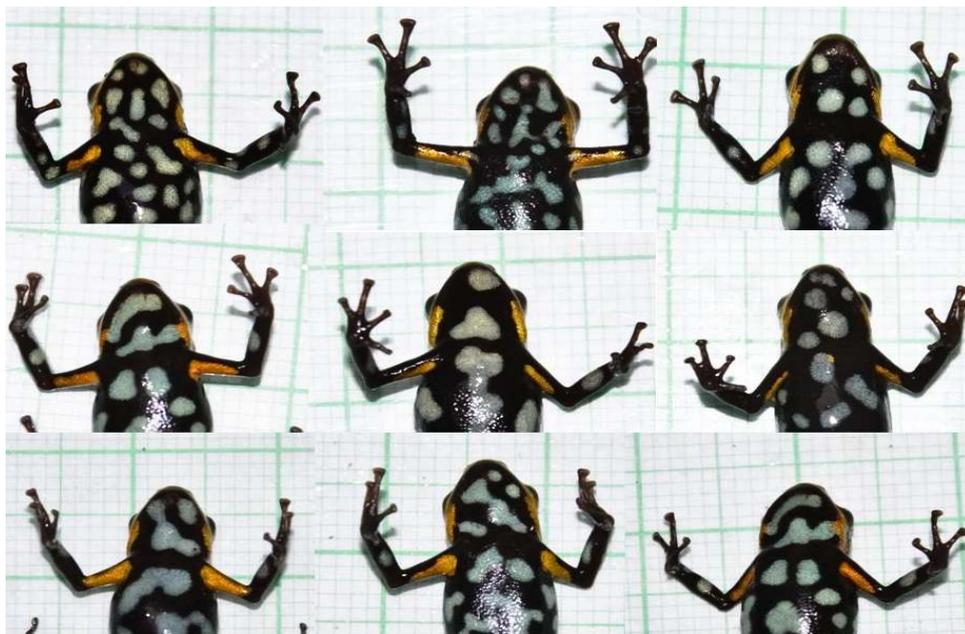


Figure 13. Some individuals of Supatá's Golden frog registered during the population monitoring samplings, the spot patterns on the belly helps to identify each frog.

Herpetofauna Inventory: In total were registered for Supatá 15 amphibian species distributed in 7 families and 9 genera, and 14 reptile species distributed in 5 families and 11 genera (table 4, figure 14).

Table 4. List of species amphibian and reptile species recorded during the herpetofauna inventory performed in the municipality of Supatá

CLASS	ORDER	SUBORDER	FAMILY	SPECIES
AMPHIBIA	ANURA		Aromobatidae	<i>Rheobates palmatus</i>
			Bufonidae	<i>Rhinella marina</i>
				<i>Rhinella gr. sternosignata</i>
			Centrolenidae	<i>Espadarana andina</i>
			Dendrobatidae	<i>Hyloxalus subpunctatus</i>
				<i>Hyloxalus sp. nov. "Supatá"</i>
				<i>Ranitomeya sp. nov. "Supatáe"</i>
			Hylidae	<i>Dendropsophus labialis</i>
				<i>Dendropsophus padreluna</i>
				<i>Hypsiboas crepitans</i>
			Strabomantidae	<i>Pristimantis gr. bogotensis</i>
				<i>Pristimantis uisae</i>
				<i>Pristimantis sp. "ojiazul"</i>
	CAUDATA		Plethodontidae	<i>Bolitoglossa adspersa</i>
<i>Bolitoglossa pandi</i>				
REPTILIA	SQUAMATA	SAURIA	Gymnophthalmidae	<i>Anadia rhombifera</i>
				<i>Ptychoglossus bicolor</i>
				<i>Riama striata</i>
			Polychrotidae	<i>Anolis apollinaris</i>
				<i>Anolis heterodermus</i>
				<i>Anolis tolimensis</i>
		Sphaerodactylidae	<i>Lepidoblepharis colombianus</i>	
		SERPENTES	Colubridae	<i>Atractus crassicaudatus</i>
				<i>Atractus wagleri</i>
				<i>Chironius monticola</i>
				<i>Cleia cleia</i>
<i>Lampropeltis triangulum</i>				
<i>Liophis epinephelus</i>				
Elapidae	<i>Micrurus mipartitus</i>			



Figure 14. Some amphibians and reptiles species registered in the herpetofauna inventory performed in Supatá.

Reforestation Plan:

Considering the schedule to follow for this phase of the project, we achieved to comply with the first phase (meetings with landowners and farmers, to integrate them to the reforestation plan), reaching alliances with groups of people interested to implement the phase two (establishment of pilots of nursery plants).

Additionally, three tree planting events of native species were held, the table 5 shows the dates, number of participants and numbers of sown trees. It should be highlighted that these trees were purchased from local plant nurseries and have been care after planting by the landowners; these tree planting days were conducted as part of the activities of the Supatá’s Golden Frog Festivals of the years 2009 and 2011 (Figure 15).

Table 5. Tree planting events during the development of this project.

Date	Number of participants	Number of plants sowed
05- Dec - 2009	30	50
09- Dec- 2009	40	50
10- Dec - 2011	40	60

Currently, with alliances reached with the people interested in reforesting priority areas for the water protection, has managed to establish a small plant nursery, which supports about 500 seedlings, that are expected in the coming months be planted in previously established areas.



Figure 15. Tree planting days held within the Supatá's Golden Frog Festivals activities, in relevant areas for the water protection.

ACHIEVEMENTS AND IMPACTS

The project has achieved its most important impacts in the local community work phase, the best evidence about this, is the active participation of a large number of inhabitants of Supatá in the environmental, play and educational activities carried out in this project; it is estimated that between 500 to 600 people annually have participated in the Supatá's Golden Frog festival activities and more than 100 people (mainly children and young people) have been involved in the workshops, meetings and other activities developed by the project team, which undoubtedly have generated an change attitude toward the environmental issues in the region.

Regarding the Environmental Leadership School, this demonstrated to have a positive impact to create an environmental awareness among the participants. The information provided in this program to the participants, was forwarded to their families members, therefore the message of this program was transmitted to many more people. The environmental leadership now is lies in the hands of new generations those have begun to understand that they are a fundamental part in the decisions made in a future regarding the environmental protection and the proper management of natural resources; this is certainly a long-term impact on the nature conservation in this municipality.

With the mayoral elections in 2011, the candidates adopted on their working agendas an environmental policy clearer than in earlier times. These changes included diverse proposals for the protection of water births, vitals for supplying the liquid to the Supatá's population, protection of forest areas that are linked with the rivers and streams, recycling and reusing programs. These proposals and ideas were not considered in the political agendas of the candidates in the past, because the environmental issues were not an essential part in their government policies. These changes in attitude are partly due to the different awareness activities carried out in this project, which aroused the interest of the local community in the environmental problems that they were facing, which leads to demand to their political proposals and solutions to these problems.

Another result to highlight about the work with the community and local authorities was the preliminary declaration of the area where live the Supatá's Golden frog as a natural reserve, which in some way can decrease the deforestation of these forest fragments by banning to the landowners to continue impacting the forest. Although it is not a measure to ensure the protection of these forest fragments, this is the first step of a real conservation action.

In recent years, each Colombian municipality should make an upgrade of their land management plans (POT for its acronym in Spanish), a document which, among other topics, a delimitation of land uses within the municipality is made. In the first draft completed in 2012, the two forest relicts where were found for first time the Supatá's Golden Frog, were included within the municipal nature reserve areas. These forests are on private land, and its extension is not more than 3 hectares, but if the designation of protected area continues until the final update of POT, the owners of these properties could not make use of these relict forests. Another way to protect these forest fragments is the purchase (and therefore privatization), of these lands, but our organization does not believe that this is the solution to ensure the conservation of this species and its habitats, but the work with local residents, who living around of these forests and those who use them, often in an unsustainable way.

The population monitoring contributed to know about the real conservation status and geographical distribution of the Supatá's Golden Frog. The acquisition of these data will be contributing to strengthen the baseline knowledge of this amphibian, which will be useful in making decisions or in designing future conservation programs directed toward this frog. The data obtained from this monitoring, as well as of the explorations performed between Negro and Bogota rivers, in similar areas where the Supatá Golden frog lives, show that this species is restricted to the forest relicts from the Supatá and San Francisco municipalities, in an area of distribution of less than two square kilometers. Moreover, the monitoring allowed show that the golden frog is a common species in forest remnants where it lives, but it needs special conditions to survive in these (e.g.: presence of bromeliads, temperature and humidity conditions, etc.). Not all

forest fragments found in the areal distribution are occupied by individuals of this species, which makes it necessary to further studies on its ecological requirements, diet and population dynamics, for a better understanding of the ecology and biology of this frog. For the moment, the data obtained in the monitoring will be part of the baseline of knowledge of this species; the data are not inconclusive, demonstrating the need of further studies, but which are essential to begin the understanding of aspects such as biology, ecology and natural history of the species, fundamental pillars for any decision on the conservation of this frog and the habitats that uses.

The herpetofauna inventory of Supatá enabled to make important findings with respect to species that are listed by IUCN as DD (data deficient), contributing significantly to knowledge about these species poorly known. Among the relevant findings, are the new reports of several species for the region, as well as new altitude records, and the report of three possible new species (which are being evaluated by specialists, who confirmed the findings).

Like for our flagship species, all species of reptiles and amphibians reported in this inventory, face the same threats of extinction (loss and fragmentation of habitat, mainly), allowing to know the next step, make an assessment of the current state of conservation of these species in the municipality, which will reveal their actual distribution and the current status of their populations. With this information, we might think of designing a regional plan for the herpetofauna conservation, which can be designed with more specific strategies for each of the species there including.

All these project achievements have a positive impact on the amphibian conservation because these will lead to a better understanding of the target species for the project, besides to the local community involvement in nature conservation has benefited the local amphibians for the reason that these are a good example of wildlife species to conserve by their high vulnerability and its importance within the ecosystems that they occupy.



“Those who will make the difference in the nature conservation”. Kids with frog masks made by themselves in the third Supatá’s Golden Frog festival.

CONCLUSION

The Supatá’s Golden Frog project is a good example of how this kind of projects can have a huge long term impact if among its principal axes is the involvement of local communities in its conservation activities. Undoubtedly the achievements of this project are in part due to the active participation of the Supatá inhabitants, who saw in this a real possibility of involvement and decision making with respect to environmental problems that afflict their region. After five years of continuous work with the Supatá community, the members of Ecodiversidad Colombia foundation believe that Supatá is currently a pioneer town in the nature conservation and although much remains to be done, the message about the need to protect their natural heritage and make a appropriate use of the natural resources of the municipality, it is now part of the collective conscience. In the words of one environmental leader from Supatá, the seed has already been sown.

Now, the Supatá's Golden frog is a flagship species which became pride of the municipality and its inhabitants, the protection of their habitat is now a concern of the local authorities, not only because the species has a meaning for the Supatá people, but because they are aware that these last Andean forest relicts provide various ecological services to the community.

All activities and the information obtained during the development of this project will be the basis for new conservation projects or management plans for the species involved here. We hope to continue the work that allow protect the Supatá's Golden Frog and the other native animals and plants species from this area of the Colombian Andes.

PROBLEMS ENCOUNTERED AND LESSONS LEARNT

During the course of the project activities, the team project has faced different obstacles, typical of working with local communities. In particular reference the project had some impasses with some members of the local government, due to the political need to highlight of them, which made that hinder some activities with the community. This impasse was overcome by a huge work of "diplomacy" in which was reached several agreements with these "problematic politicians" that allowed the development of the proposed activities.

Another impasse which the team had no control were the extreme weather conditions that governed during the development of the samplings in the field that made necessary sometimes the suspension of some samplings due to high rainfall. When the conditions improved, the team could resume the field work for data collection.

As regards the reforestation plan, this could only develop in the early stages. In the first meetings with the landowners where we wanted to start the interconnection of the forest remnants, they were reluctant to be held the sowing of native plants because they

considered that they would lose grazing areas. Also some political interests hampered this project phase, which is not allowed to finish successfully. As a solution to this impasse, we have tried to create alliances with the mayoralty of Supatá so that together initiate the reforestation of some important watershed that we know are areas where the focal species inhabits.

A problem that we face as a team and that made the execution time of this project be extended was the different modifications made to budgeted time to invest due to academic and job obligations that undertook the most of the team members. We must remember that the work of each team member is a voluntary. Despite this, the commitment of each member of our foundation was sufficiently big to complete the project although he had a long delay in the execution times, excellent results and met most of the objectives originally. Although the project had a long delay in the execution times, we achieved excellent results and it was complied with most of the objectives proposed. The Supatá work continues and as team leader I am sure all members listed above give their best effort contributing with ideas, time in the field and support to the future activities in the town, because there are many people who count on us to continue this conservation process.

One of the biggest lessons that the project team learned during the development of this project with regard to the work with the community is that must be cautious when calling people to participate in some activity because some of these may feel displaced by the work being done (mostly politicians and leaders), the better is to involve even more these "conflict" people in the activities to make them feel important in these, but not allowing that they use the activities for support political campaign or to support personal interests.



Stuart Paterson (CLP member) supporting some activities within the Environmental Leadership School with “Cuida Palos”

IN THE FUTURE

The members of Ecodiversidad Colombia foundation believe that the local community that living in the areas where there are threatened wildlife are who ultimately decide the future of these species, so our work must continue providing alternatives and tools to these people who have the forest destruction or transformation as first source of income.

In the medium term we will initiate the necessary arrangements for strengthen and support a natural reserve area that contributes to the protection and conservation of the Supatá’s Golden Frog and its habitat benefiting indirectly the other wildlife that inhabit these forest fragments. To achieve this, we will need funding, the Rotary club and Dendrobatidae Nederland has expressed interest to collaborate with us for this next step

in the Supatá's Golden Frog project. Also we will continue carrying out activities with the community and "Cuida Palos" children's group, and will resume with the reforestation plan initially proposed, for which we are initiating alliances with the mayoralty of Supatá that will facilitate this work.

Last but not least, diverse educational and scientific papers will be published with the results and experiences obtained in the course of this project. The illustrated field guide of amphibians and reptiles from Supatá, some educational material and the official scientific description of our flagship species will be published in the fourth quarter of this year.

APPENDICES

Appendix 1. Budget summary

Itemized expenses	Total CLP requested (USD)	Total CLP used (USD)
PHASE I - PROJECT PREPARATION		
Administration		
Communications (telephone/internet/postage)	400.00	625.00
Books and printing journal articles/materials	200.00	200.00
Insurance	200.00	700.00
Visas and permits	0.00	0.00
Team training (Please detail: Environmental work and amphibian population monitoring training for five days: meeting place rent, accommodation, transports and food and drinks for the project team)	400.00	300.00
Reconnaissance		
Medical supplies/first aid	100.00	100.00
Equipment		
Scientific/field equipment and supplies (Please detail: 1 laptop, 1 video camera, 5 calipers, 2 GPS, 3 digital weighs, 3 digital thermo-hygrometer, 6 head flashlights, rechargeable batteries, plastic bags, vinyl gloves, field notebooks, disinfectant solution, buckets, etc)	3,000.00	3,292.00
Photographic equipment (Please detail: 3 digital camera and 6 memory card)	1,000.00	1,000.00
Camping equipment (Please detail main items: 5 sleeping bag, 2 camping, 2 portable butane stoves, butane fuel)	400.00	400.00
Field guides	700.00	700.00
Maps	0.00	0.00
Boat/engine/truck	0.00	0.00
Fuel	0.00	0.00
Other (Please detail:)	0.00	0.00
PHASE II - IMPLEMENTATION EXPENSES		

Administration		
Insurance	200.00	200.00
Transportation		
Fuel	0.00	0.00
Intermunicipal bus tickets to Supatá to conduct the project activities	1,500.00	2,320.00
Field vehicle rental	500.00	500.00
Accommodation for team members and local guides (Please detail: Hotel in the Supatá town for 5 team members and 3 accompanying, and payment of camping in some farms)	1,000.00	1,560.00
Food for team members and local guides (Please detail: Food in field 496 man-day @ US\$ 8/day)	3,500.00	3,968.00
Workshops		
Outreach/education activities and materials (brochures, posters, video, t-shirts, etc.) (Please detail: 1000 calendars, 2000 stickers, 70 t-shirts, 1000 environmental booklets)	3,000.00	2,100.00
Workshops expenses	400.00	2,150.00
Other (Please detail: Reforestation programme)	5,000.00	2,500.00
PHASE III - POST-PROJECT EXPENSES		
Administration		
Administration	1,500.00	1,650.00
Report production and results dissemination	400.00	200.00
Other (Please detail: Contingency (10% of total budget))	1,633.00	568.00
Total	25,033.00	25,033.00

Appendix 2. Education & Outreach materials



II Festival de la Rana Dorada de Supatá

IV Festival Departamental de Danza Infantil y Juvenil

25 y 6

Diciembre

Es la Fiesta de la NATURALEZA.

Supatá te Espera !!!

- Caminata
- Feria Artesanal
- Fashion Ecológico
- Cineforo Ambiental
- Concurso de Pintura
- Carrozas Ambientales
- Feria Agroalimentaria
- Carrera de Carros Esferados
- Obra de Teatro (Calentamiento Global)
- Primer Torneo de la Rana Dorada de Supatá

Gran Verbena popular

Alcaldía de Supatá
www.ecodiversidad.org
info@ecodiversidad.org
313 300 47 69

Es la Fiesta de la Naturaleza
8 y 9 de Diciembre de 2012

5to Festival de la Rana Dorada de Supatá

11 Km 5.51

- Caminata Ambiental
- Tra Carrera Atlética "Rana Dorada de Supatá"
- Olimpiadas Ambientales
- Cineforo Ambiental

Torneo de Rana

Feria Artesanal

Obra de Teatro

Supatá te Espera !!!

INVITAN:

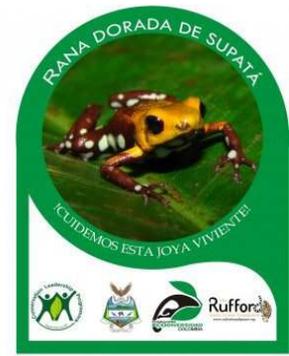
ECODIVERSIDAD COLOMBIA

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Informative Posters of Supatá's Golden Frog festivals



Calendar and stickers distributed to Supatá's community



Cover of the primer "sowing the environmental future"

EL TIEMPO | Bogotá | 10 OCTUBRE DE 2009

1-16 MEDIO AMBIENTE

Parques Nacionales de Colombia lanzó una guía con la descripción de las 55 zonas de reserva del país.

EJEMPLO DE CONSERVACIÓN DE ESPECIE EN RIESGO

Un pueblo donde la 'reina' es una rana

En Supatá (Cundinamarca) un anfibio venenoso es el orgullo de la gente. Tiene estatua y le organizan un festival que arrastra hoy.

JAVIER SOLA, HERRERA
REDACCIÓN VIDA DE VIVO

Aquí se hay fiestas de San Juan Bolívar, ni del primer Presidente que pasó un día en estas tierras, y muchos metros de agua; albedos estivos que tras la energía eléctrica y se abrió el primer hospital.

En Supatá, un escondido municipio de Cundinamarca que está a dos horas de Bogotá, hay un asunto en que el título de sus habitantes que poseen reanudar el mundo, sin que haya mayores distracciones, es una rana. Por eso es la reina del planeta que tiene estatua propia.

Está en el centro de la plaza principal. Es amarilla, tiene algunas vides del color de las montañas que rodean el lugar y está rodeada con una plaza que espíritu que el Corral local declaró al anfibio como patrimonio natural del lugar.

Y es que por causa de ella, el sector centro de este municipio calienta su salud del anfibio y se ha visto impreso en las páginas de revistas como National Geographic y la BBC de Londres, que lo han catalogado como "la punta de un gigantesco iceberg plásmico de potencialidades biológicas".

La rana es tan grande como una almendra y es venenosa. Pertenece al grupo de las de

733 especies de anfibios hay en el país. La cifra lo convierte en el más biodiverso del mundo. La mayoría son raras y raras.

en Biología de la Universidad Distrital de Bogotá, que la vio entre unas bromelias durante un rutinario ejercicio de campo. Inicialmente pensaron que era un anfibio común, pero la organización Conservación Internacional (CI) confirmó su valor científico.

Desde sus descubrimientos, la Fundación Biodiversidad, apoyada por Conservation Leadership Project (CLP) que impulsa proyectos con la ayuda

cuando en todo el planeta, incluso un trabajo de restauración ambiental con las plantas de agua, al igual que estadísticas que han demostrado que la especie vive en un espacio muy reducido por sus 10 hectáreas de bosque nativo. Y que es un animal muy amenazado por la deforestación y los cambios climáticos.

"Su supervivencia está en un riesgo muy alto que, entre otras cosas, obliga a trabajar de modo que se pueda hacer con nosotros", explica Fabiano Torres, biólogo de la Fundación. La Universidad de los Andes y CI también hacen estudios para reducir su vulnerabilidad.

Para protegerla más aún se reservó. La principal amenaza de la rana es la propia gente. El currículo escolar incluye su cuidado como tarea clave en las escuelas. Y los campesinos la defienden de forma que a veces llegan a presentarla donde la pueden encontrar. "Tenemos que ser cuidadosos para que no vaya a ser víctima de un tráfico ilegal", explica el biólogo Giovanni Chaves.

Para lo más importante es que cada año, por esta época, las autoridades se reúnen a las orillas para discutir sobre el Festival de la Rana Dorada, una de

U\$ 10 mil millones daría E.U. a países pobres para enfrentar el calentamiento. El plan es presentado en COP16.

Compromiso

Leonardo DiCaprio y Penélope Cruz, entre otras estrellas, se están movilizándolo para presionar a los líderes mundiales antes de Copenhague.

Arrecifes

Hay se celebra en Colombia el Día nacional de los arrecifes. U. Jorge Tadeo Lozano impulsa el diseño de un plan de conservación.

¿Bla, bla, bla?

El presidente peruano, Alan García, dijo que cambiar el clima será sólo "bla, bla, bla. Para el mundo lo único clave son las armas".

Press release in the most important news paper of Colombia

EL TESORO ESCONDIDO DE SUPATÁ

Una nueva especie para el mundo

Estudiantes de la Universidad Francisco José de Caldas, en medio de una salida de campo para observar aves y mamíferos, hallaron lo que puede considerarse un tesoro para la ciencia, aunque no supera el tamaño de una moneda.

Se trata de una rana de la cual no se tenía noticia en el mundo. Luego de fotografiarla, buscarla en decenas de libros e inventarios, se dieron cuenta de que ninguna otra tenía ese color gris y violeta.

La respuesta de Conservación Internacional fue contundente: "Es una nueva especie aún no registrada". Entonces, en honor al pueblo en donde la hallaron, a unas dos horas de Bogotá, decidieron llamarla Rana Dorada de Supatá.

Tamaño real

Ranas en Colombia

Este es el país más rico del mundo en ranas. Hay registradas 735 especies y cuando se estudian áreas no exploradas, se podrían superar las mil. Un ejemplo en las selvas de Boyacá (Cajicá), en un parche boscoso de 5.400 hectáreas, entre 1.000 y 2.000 metros de altura, hay 45 especies. Es la mayor cantidad de ranas por unidad de superficie del mundo.

Especies 'termómetro'

Desde hace casi 30 años, investigadores en el mundo alertan sobre un fenómeno que ha hecho desaparecer poblaciones enteras de ranas, considerados indicadores biológicos de la calidad del ambiente.

Según el Libro Rojo de Anfibios Amenazados, publicado por el Instituto Alexander von Humboldt, el cambio climático habría incrementado la actividad de insectos portadores de un hongo patógeno. También culpa a la lluvia ácida. Al menos 159 especies de ranas ya desaparecieron de la faz de la Tierra.

Rana Dorada de Supatá

Se cree que el grupo de la Rana Dorada de Supatá pertenece al género *Ranitomeya*.

Especie *Ranitomeya* sp.

Familia *Dendrobatiidae*

Mide alrededor de 2 centímetros y se encuentra en un fragmento de bosque muy pequeño, a más de 2.000 metros de altura sobre el nivel del mar, lo que es muy extraño en esta clase de ranas venenosas, propias de zonas más cálidas.

Piel

Epidermis multicelularizada

Glandula Mercuria

Glandula Venenosa

Mucosidad

Potencial farmacológico

Su veneno solo actúa si es inyectado en el torrente sanguíneo y ella no es agresiva: su tamaño le impide serlo. Su piel secreta sustancias tóxicas que poseen un gran potencial farmacológico. Especies similares en el Ecuador son portadoras de una sustancia (la ribotaxina) 300 veces más efectiva contra el dolor que la morfina.

El grupo que la descubrió

Oswaldo Cortes Herrera, Giovanni Chaves Portilla, Fabian Torres Bolívar, Aislinn Vilagrá Chorro, Erika Salazar Gómez, José Gal Arroyo y Johan Lozano.

Búsqueda-rescate I

Dos parejas fueron capturadas y llevadas a la Universidad de los Andes, para estudiarlas e intentar su reproducción en cautiverio y así rescatar el ecosistema.

La rana sobrevive en un área donde los árboles fueron reemplazados por potreros para ganado o siembras. Esto la "arrinconó" en medio de pastizales.

Búsqueda-rescate II

El Grupo de Anfibios Amenazados de Colombia, nombre que ahora tienen los estudiantes, pretende desarrollar estrategias de conservación del hábitat para mantener la especie estable.

Para ello cuenta con el apoyo de Conservación Internacional y de la Estación Botánica, que le otorgó una beca de investigación.

Infografía y cronograma gráfico: David Uribe García, Diego Ramirez Prieto. Investigación: Jorge Ramal Castañeda. Fuentes: Grupo de Anfibios Amenazados de Colombia, www.supata.gov.co, Conservación Internacional, Libro Rojo de Anfibios Amenazados Instituto Alexander von Humboldt. Fotos: Giovanni Chaves Portilla.

30 AGOSTO-SEPTIEMBRE 07 Cotacace 6"

30 AGOSTO-SEPTIEMBRE 07 31

Infographic in the Catorce 6 environmental magazine



Poster presented at 23rd International Congress for Conservation Biology (China, 2009).

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