



**HERPETO-PLAN FOR THE CONSERVATION OF AMPHIBIANS IN THE SIERRA
NEVADA COLOMBIANA.**

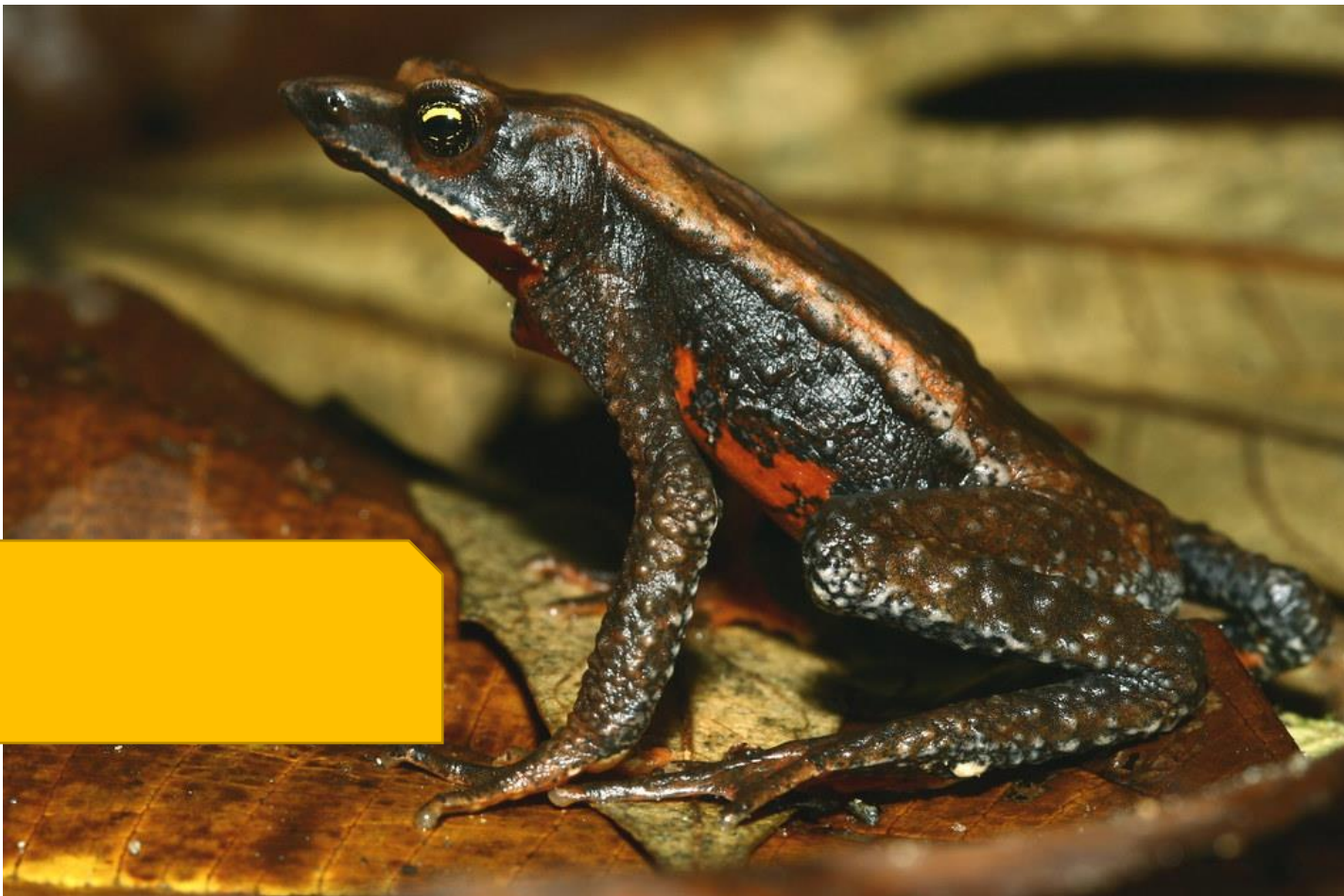
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1. INTRODUCTION

This plan aims to conserve 3 endemic frogs in Colombia: The frogs 'Atelopus laetissimus', 'Atelopus carrikeri' and 'Atelopus nahumae' are endemic species of Colombia, and can only be found in the Sierra Nevada de Santa Marta, home to the indigenous Arahuac community. These amphibians are exposed to strong anthropic pressures due to the vulnerability of ecosystem conditions: destruction of habitats (deforestation for illegal mining and agricultural activities), climate change and invasive species (Chytrid fungus). This plan, our organization Colombian Páramos Corporation, analyzes each of the occurrences of the threats described and proposes multidisciplinary strategies to avoid the mass extinction of amphibians in Colombian ecosystems. In conjunction with the Arahuac, Corpomagdalena and WWF indigenous communities, we will execute actions based on the IUCN SGC conservation guidelines.

This Action Plan has taken as a reference the National Plan for the Conservation of Amphibians of Colombia (Coloma 2020). We believe that in this way the planning process can be streamlined in a smaller, local environment, allowing the general lines of the national plan to be operationalized, which will also allow evaluating its applicability, and correcting or improving the proposed actions if required.





2. MISSION

Establish the Sierra Nevada de Santa Marta as a successful example of biodiversity conservation, through local actions developed hand in hand with a strong complement of inter-institutional cooperation.

3. OBJECTIVES

- Establish an inter-institutional management group to ensure the implementation, monitoring and evaluation of this Action Plan.
- Develop and / or strengthen the legal instruments necessary to establish a legal regime for the protection of biodiversity and comprehensive management of land use in the Sierra Nevada de Santa Marta.
- Complete the species inventory, including the description of new species and solve the taxonomic problems of the amphibian species of Sierra Nevada de Santa Marta.
- Investigate the natural history, population biology, and habitat requirements of each species.
- Identify the main threats such as emerging diseases, invasive species, etc., and their control in natural ecosystems.
- Long-term monitoring of the amphibian populations of the Sierra Nevada de Santa Marta, especially the priority ones.
- Promote in situ conservation processes for amphibian species in the Sierra Nevada de Santa Marta, by increasing the state's protected territory and restoring the habitat of threatened species.
- Breeding and ex situ management (ex situ management programs, assisted reproduction) for endemic amphibian species in the Sierra Nevada de Santa Marta.
- Long-term safeguarding of the genetic diversity of all amphibian species of the Sierra Nevada de Santa Marta and surrounding areas.





- Maintain up-to-date and freely accessible information about amphibian species in Sierra Nevada de Santa Marta for effective decision-making.
- Generate a positive perception and attitude towards amphibian conservation in the Sierra Nevada de Santa Marta cantons.
- Identify and put into practice financing mechanisms that guarantee the availability of long-term funds for the conservation of the amphibians of the Sierra Nevada de Santa Marta and their associated ecosystems.
- Identify organizations of different kinds that can strengthen, from their scope of governance and action, investigation, monitoring and management processes of the territory involved within the Sierra Nevada de Santa Marta.
- Develop a bank of small to large-scale projects that allow management and management actions of the Sierra Nevada de Santa Marta territory in the short and medium term.

4. TIME FRAME OF THE PLAN

This Action Plan has a time range of 10 years from its approval and official publication by the competent environmental authority. Its first evaluation will be carried out at the end of the year 2025, which would correspond to five years from its presentation and official launch.

5. AREA OF APPLICATION

The plan covers the territory that includes the entire Sierra Nevada previously described in section 5.3 of this document.

6. LINES OF ACTION

Line of Action 1 Policy, legislation and institutional articulation

Line of Action 2 Research and monitoring of amphibians

Line of Action 3 In situ and ex situ conservation

Line of Action 4 Communication, education and training

Line of Action 5 Financial sustainability





7. SPECIES

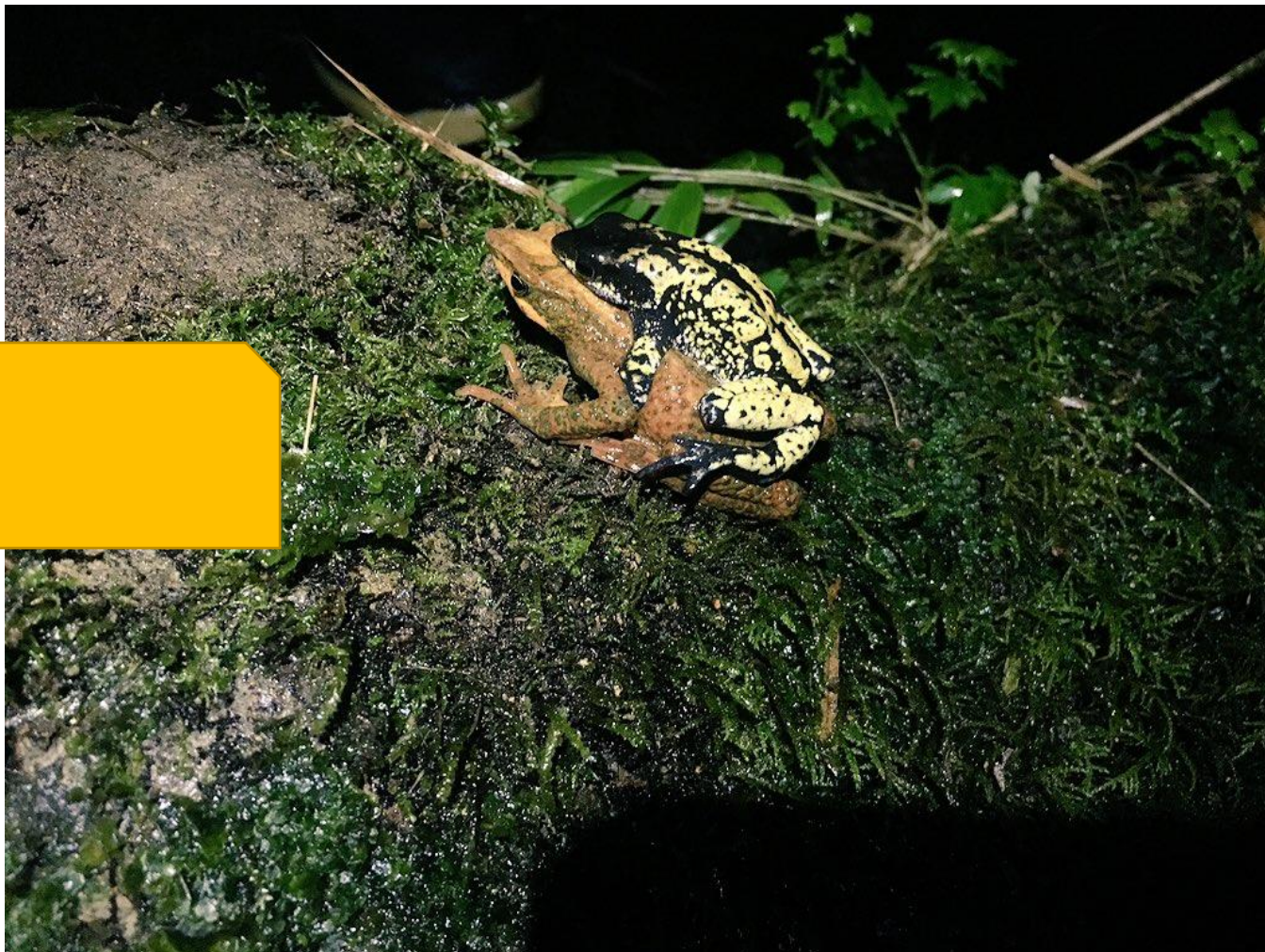
7.1. *Atelopus laetissimus*

The Harlequin of Santa Marta or Variegated Harlequin (*Atelopus laetissimus*), inhabits between 1500 and 2900 meters of elevation in ravines of the humid forests of the Sierra Nevada de Santa Marta, from where it is endemic. This frog is characterized by having a body covered with pustules, which differentiate it from the other species of Harlequin Frogs of the Sierra Nevada. This species can be found active in forest litter during daylight hours, while at night it remains immobile on leaves and branches near streams, apparently waiting to capture insects. In their only reproductive event that occurs between May and April, males and females congregate to spawn in streams. Like other *Atelopus* species, males take care of their females until the reproductive event is over there. This frog is in critical danger of extinction due to its high susceptibility to decline due to climate change and Chytridiomycosis, added to the loss of its natural habitat due to timber extraction and expansion of the agricultural barrier.

IUCN Red List Category And Criteria

Endangered B1ab(iii)

Listed as Endangered because its extent of occurrence (EOO) is estimated at 797 km², it is known only from three threat-defined locations, and there is continuing decline in the area, extent, and quality of its habitat in northern Colombia. There is lack of evidence for ongoing declines or sufficient reasons to suspect precipitous declines will occur in the near future. However, the threat of chytrid being introduced to the area warrants close monitoring of known subpopulations for infection.





Geographic Range

This species is known from three threat-defined locations in Colombia: (1) the slopes of southeast Cuchilla San Lorenzo, in the northwest sector of Parque Nacional Natural Sierra Nevada de Santa Marta (in the department of Magdalena), and the adjacent El Dorado Nature Reserve, (2) in La Serranía de Cebolletas, in the department of Magdalena, and (3) in two watersheds in Guajira (L.A. Rueda-Solano pers. comm. 2014). These locations are geographically distinct and separated by high mountain formations; the threat of habitat loss is driven by local factors and differs in severity among sites. It has been recorded from 1,900-2,880 m asl. Its extent of occurrence (EOO) is estimated to be 797 km².

Populations

It was historically a common species when surveyed in 1992. A subpopulation was rediscovered on 22 May 2006 when staff of the El Dorado Nature Reserve located two individuals in a small forested stream. In 2006, surveys conducted at San Lorenzo recorded 12 apparently healthy individuals over the course of two days (Carvajalino-Fernández et al. 2008), and another group encountered relatively high abundances of up to 10-12 individuals occurring on individual stream-side boulders (J.V. Rueda-Almonacid pers. comm. 2014). Sampling efforts on four separate occasions in 2006 and 2007 provide evidence of a stable population in Sierra Nevada de Santa Marta, with observations of 357 individuals at two sample sites; however, the individuals encountered were predominantly males (96% of observations) and no juveniles were observed (Granda-Rodríguez et al. 2008, 2012). More recent monitoring in San Lorenzo (since 2013) also provides evidence of a stable population, but corroborates previous findings of a male-biased sex ratio; females were observed relatively infrequently (L.A. Rueda-Solano pers. comm. 2014). While locally abundant, individuals appear to aggregate only in a few specific stream reaches at each site and are absent from most nearby suitable habitat.





Habitat And Ecology

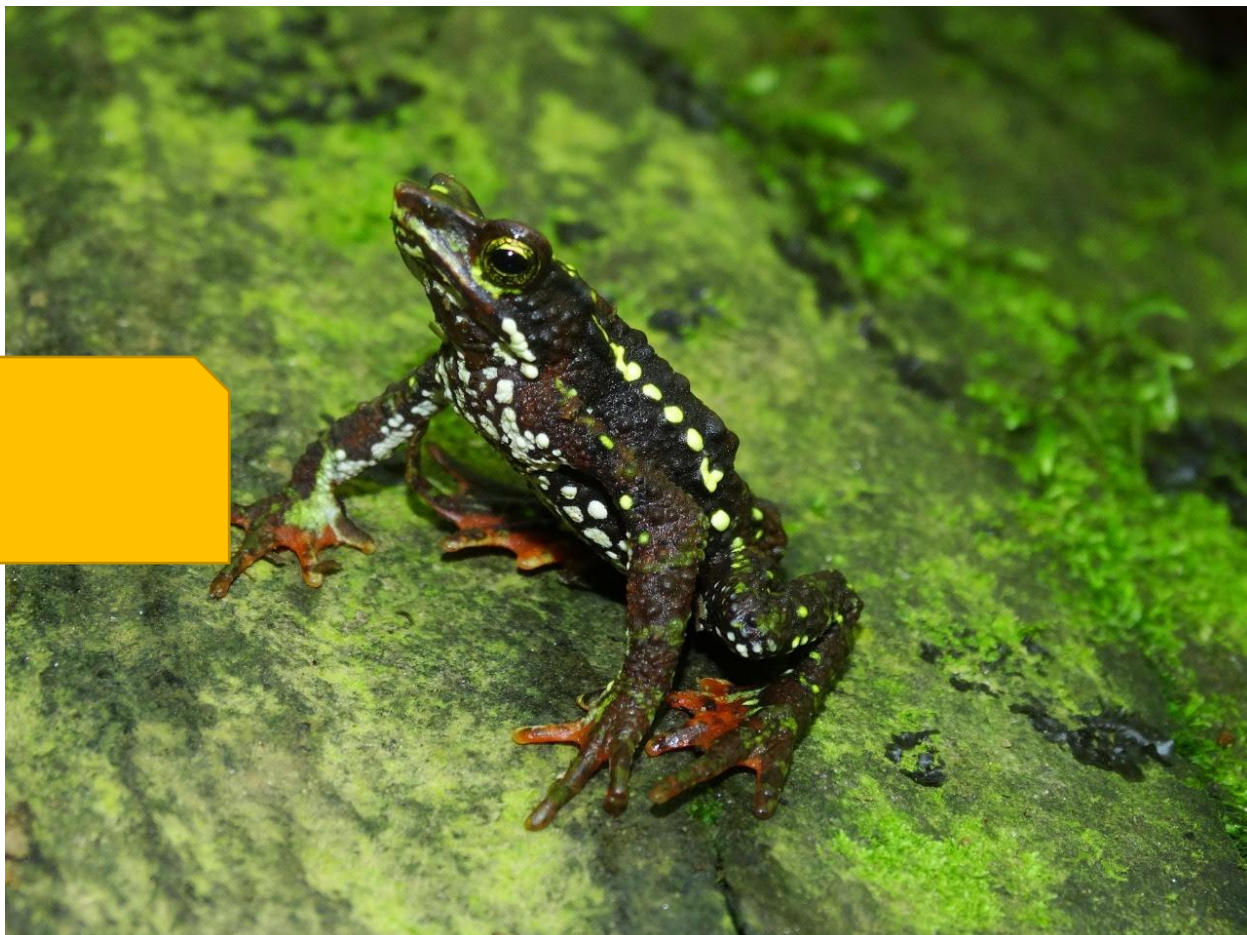
This species is an inhabitant of sub-Andean forests. It can also tolerate some modification of its habitat, but is more abundant in intact habitat (Granda-Rodríguez et al. 2008). Individuals have been found within a closed-canopy (up to 25 m) secondary forest and in riparian forest, close to a creek (Carvajalino-Fernández et al. 2008). This species lays egg chains in streams, where the tadpoles also develop.

Threats

Chytridiomycosis has had a devastating impact on other high-altitude *Atelopus* species and represents a plausible threat for this species; however, infections have not been detected in Sierra Nevada de Santa Marta (L.A. Rueda-Solano pers. comm. 2014). Habitat loss due to agriculture and pollution from the fumigation of illegal crops are also major threats. Specifically, the subpopulation in La Serranía de Cebolletas is threatened by ongoing conversion of forest to pasture lands (L.A. Rueda-Solano pers. comm. 2014), and there is forest loss occurring in San Lorenzo near the El Dorado Reserve (O. Cortés pers. comm. 2014).

Conservation Actions

Its range includes Parque Nacional Natural Sierra Nevada de Santa Marta, and the adjacent El Dorado Nature Reserve. The El Dorado Reserve was established in March 2006 to secure one of the last forested valleys for this and other threatened amphibian and bird species (Fundación ProAves 2006). It also occurs within a protected area associated with the Rio Palomino watershed in Guajira (L.A. Rueda-Solano pers. comm. 2014). Additional habitat protection is needed at La Serranía de Cebolletas. Ongoing surveys are needed to monitor the current population status of this species, and research is needed to determine the presence of chytrid.





7.2. *Atelopus carrikeri*

The Guajiro Harlequin or Colorado Harlequin (*Atelopus carrikeri*), is in critical danger of extinction. It is an endemic frog of the ravines of the Páramos of the Sierra Nevada de Santa Marta. In addition, it is the amphibian that reaches the highest elevation in Colombia (from 3,000 to 4,800 meters above sea level). It is a robust species of approx 5 cm although the females can reach sizes of 7 cm. It is polymorphic, this means that it has a very variable coloration, individuals can be from a uniform black to an intense red through the entire range of yellows. *Atelopus carrikeri* has wide thermal ranges in its body temperature (5-23 ° C) due to a possible adaptation to the fluctuating temperatures of its environment. There are even reports that it can survive frostbite. The tadpoles attached to the bed of the streams are very abundant, reaching densities of almost one individual per square meter. The threats to the conservation of this Harlequin, is the high susceptibility to decline due to Chitridiomycosis, added to the loss of its natural habitat due to burns carried out in the moors of the Sierra.

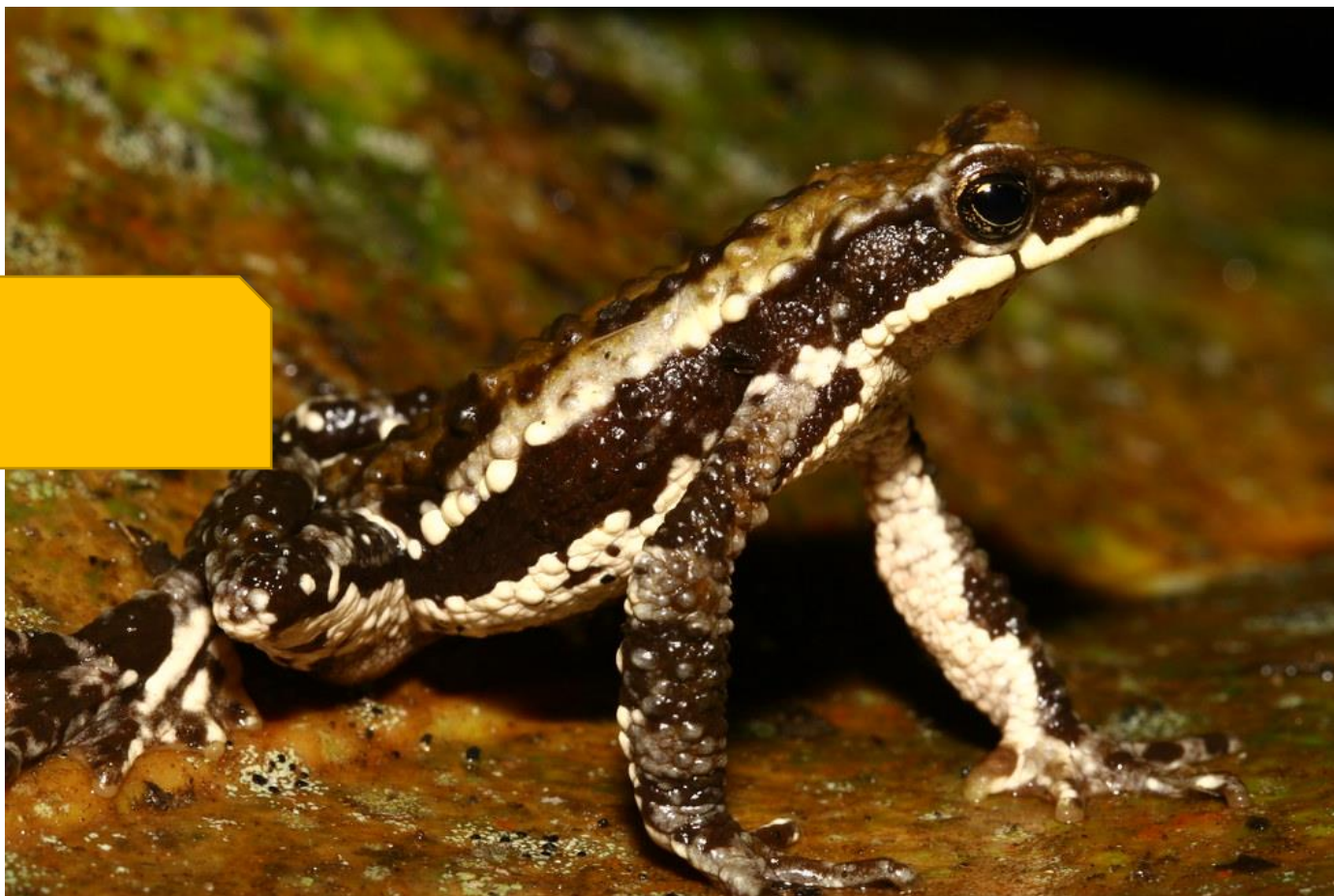
IUCN Red List Category And Criteria

Endangered B1ab(iii,v)

Listed as Endangered because its extent of occurrence (EOO) is 872 km², it occurs in three to five threat-defined locations, there is ongoing decline in the extent and quality of its habitat, and there is continuing decline in the number of mature individuals.

Geographic Range

This species is known from the moorlands of the Sierra Nevada de Santa Marta in the department of Magdalena, Colombia, between 2,350–4,800 m asl. Its extent of occurrence (EOO) is 872 km², and it occurs in three to five threat-defined locations (based on the main threats affecting the species).





Populations

This species had not been seen since 1994 due to a lack of surveys in the area. However, in February 2008, it was rediscovered (many tadpoles and six adult males) in La Serrania de Cebolleta. Two of the six adults were reported "sick" (Rueda-Solano 2008). In the western side of its distribution, the species is apparently common, particularly during the rainy season (Rueda-Solano et al. 2016). In this area, surveys in 2008–2009 recorded 126 individuals (Rueda-Solano et al. 2016). Due to ongoing decline in the extent and quality of habitat, the current population trend is suspected to be decreasing, and there is an observed ongoing decline in the number of mature individuals.

Habitat and Ecology

This species occurs in sub-paramo, páramo, and super-paramo. It can adapt to modification of its habitat, and is commonly found in paddocks. It lays egg chains in streams, where the tadpoles also develop.

Threats

While this species can adapt to a degree of habitat modification, the main threats affecting it are habitat loss and degradation caused by intentional fires and agricultural activities (including crop fumigation). Using models, Forero-Medina et al. (2011) suggest that climate change could lead to 20% of this species' range shifting to higher elevations with unsuitable land cover. The 2004 assessment reported that chytridiomycosis was probably the major threat, leading to a future catastrophic population decline. However, due to the impossibility of surveys, there is currently no direct information confirming that chytrid has caused declines in this species (Colombia Red List Assessment Workshop August 2016).





Conservation Actions

The current known range of this species is entirely contained within the Sierra Nevada de Santa Marta National Park. Research is needed to better determine its population size and trends, and the impact of the current threats on its population. Due to the impact of chytrid on other high-altitude *Atelopus* species, it will be important to remain attentive to future research and monitoring on the impact of chytrid on this and other species, especially as it relates to ongoing threats, and current predictions of increased pressure on the species' ability to adapt to future climatic changes.

7.3. *Atelopus nahumae*

The Harlequin of San Lorenzo (*Atelopus nahumae*), is in critical danger of extinction. This species is endemic to the ravines of the humid forests of the Sierra Nevada de Santa Marta between 1400 and 2200 meters above sea level. The females reach sizes of approximately 6cm and the males of 4 cm. This species has two reproductive events, one between the months of May and April and between the months of November and December. Males remain clinging to females during the breeding months without feeding. The tadpoles of this species, like those of the sister species, have suction discs in their bellies, which allow them to adhere to the rocks of the streams and thus avoid being carried away by the current. The threats to the conservation of this Harlequin is the high susceptibility to decline due to climate change and Chytridiomycosis, added to the loss of its natural habitat due to timber extraction and expansion of the agricultural barrier.





**IUCN Red List Category And Criteria
Endangered B1ab(iii)**

Listed as Endangered because its extent of occurrence (EOO) is estimated to be 2,992 km², it is considered to occur in four threat-defined locations, and there is continuing decline in the area, extent, and quality of its habitat in northern Colombia. There is lack of evidence for ongoing population declines or sufficient reason to suspect precipitous declines will occur in the near future. However, the threat of chytrid being introduced to the area warrants close monitoring of known subpopulations for infection.

Geographic Range

This species is known from four threat-defined locations in Colombia: (1) the slopes of southeast Cuchilla de San Lorenzo, in the northwest sector of Parque Nacional Natural Sierra Nevada de Santa Marta (in the department of Magdalena), and the adjacent El Dorado Nature Reserve, (2) in La Serranía de Cebolletas, in the department of Magdalena, (3) an area near Nabusimake in the department of Cesar, and (4) in the Rio Ranchería watershed in the department of La Guajira (L.A. Rueda-Solano pers comm. 2014). These locations are geographically isolated and separated by high mountain formations; the threat of habitat loss is driven by local factors and differs in intensity among these sites. It has been recorded from 1,900-2,800 m asl. Its extent of occurrence (EOO) is estimated to be 2,992 km².

Populations

This was a common species when it was sampled in 1992. It was rediscovered in 2006, following survey work in the recently established El Dorado Nature Reserve. Further field work reported on the apparent health of the subpopulation at San Lorenzo (26 individuals recorded in the span of two days in 2006, observations on reproductive activities and recruitment; Carvajalino-Fernández et al. 2008).





Sampling efforts on four separate occasions in 2006 and 2007 provided additional records from Sierra Nevada de Santa Marta, with 31 individuals observed at two sites (Granda-Rodríguez et al. 2012). Another survey in 2009 found that individuals of the species, particularly juveniles, were locally abundant along a stretch of the Rio Gaira in San Lorenzo (L.A. Rueda-Solano pers. comm. 2014). In 2014, a survey of one kilometre of stream in San Lorenzo produced observations of three individuals (O. Cortés pers. comm. 2014). In general, individuals appear to aggregate only in a few specific stream reaches at each site and are absent from nearby suitable habitat.

Habitat And Ecology

This species is an inhabitant of sub-Andean forests and can also tolerate some degree of habitat disturbance. Individuals have been found within a closed-canopy (up to 25 m) secondary forest and in riparian forest, close to a creek (Carvajalino-Fernández et al. 2008). The species lays egg chains in streams, where the tadpoles also develop.

Threats

Chytridiomycosis has had a devastating impact on other high-altitude species of *Atelopus* and represents a plausible threat for this species; however, infections have not been detected in Sierra Nevada de Santa Marta (L.A. Rueda-Solano pers. comm. 2014). Other major threats include habitat loss caused by agriculture (illegal crops) and logging, and pollution caused by the fumigation of illegal crops. Specifically, the subpopulation in La Serranía de Cebolletas is threatened by ongoing conversion of forest to pasture lands (L.A. Rueda-Solano pers. comm. 2014), and there is forest loss occurring in San Lorenzo near the El Dorado Reserve (O. Cortés pers. comm. 2014).





Conservation Actions

The range of this species encompasses the Parque Nacional Natural Sierra Nevada de Santa Marta and the adjacent El Dorado Nature Reserve. El Dorado Reserve was established in March 2006 to secure one of the last forested valleys for this and other threatened amphibian and bird species (Fundación ProAves 2006). Additional habitat protection is needed at La Serranía de Cebolletas. Ongoing surveys are needed to monitor the current population status, and disease screening is needed given the potential threat of a chytridiomycosis outbreak.

8. HERPETO-PLAN FOR THE CONSERVATION OF AMPHIBIANS IN THE SIERRA NEVADA COLOMBIANA.

Next, the priority activities of the Action Plan for the Management and Conservation of Amphibians of the Sierra Nevada de Santa Marta are defined. Coordinating institution, CORPORACIÓN COLOMBIA WILD is the one that leads the execution of activities in coordination with other organizations, whether or not they are proposed in this table. Each activity has the management indicators and priority level.





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Line of Action 1: Policy, legislation and institutional articulation

Specific objectives

- Establish an institutional management structure that ensures the implementation, monitoring and evaluation of this Action Plan.
- Develop and / or strengthen the legal instruments necessary to establish a legal regime for the protection of biodiversity and comprehensive management of land use in the Sierra Nevada de Santa Marta

ACTIVITIES	INDICATORS
1.1 Establish an inter-institutional working group to facilitate coordination and cooperation among stakeholders and to monitor and evaluate the Action Plan for the conservation of amphibians in Sierra Nevada de Santa Marta.	Inter-institutional agreement that makes up the working group signed by the actors and being implemented.
1.2 Establish limitations of land use and legal protection of the habitats of the Sierra Nevada de Santa Marta in the jurisdiction of the canton Santa Marta through the management of the approval of the Ordinance for the protection and restoration of water sources, fragile ecosystems, biodiversity and environmental services, and the creation and management of municipal conservation and sustainable use areas.	Municipal ordinance approved by the Cantonal Council of the GAD of Santa Marta and its publication in the official registry.
1.3 Establish limitations of land use and legal protection of the habitats of the Sierra Nevada de Santa Marta in the jurisdiction of the Loja canton through the management of the approval.	Municipal ordinance approved by the Cantonal Council of the GAD of Loja and its publication in the official registry.
1.4 Develop and establish temporary or definitive compensation agreements with holders of public or private lands in the Sierra Nevada de Santa Marta, which allow the maintenance of critical habitats of threatened amphibians in the long term; and the provision of long-term environmental services for its area of influence.	Agreements, agreements or contracts signed and being implemented.
1.5 Define and manage a legal figure of strict protection, recognized as part of one of the subsystems of the National System of Protected Areas of Ecuador, that prohibits the development of extractive mining, hydrocarbon or forestry activities in the Sierra Nevada de Santa Marta.	Strict protection standard defined and approved by the National Environmental Authority. Official published record.
1.6 Establish agreements with the MTOP for the exclusion of dumps and signaling for the conservation of the Sierra Nevada de Santa Marta.	Agreement between UTPL, NCI, MTOP and MAAE for the exclusion of rubbish dumps from the Sierra Nevada de Santa Marta and the placement of informative and educational signage along the road

Line of Action 2: Research and monitoring of amphibians.



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Specific objectives

- Complete the inventory of amphibian species and their distribution in the Sierra Nevada de Santa Marta and its immediate area of influence.
- Describe new species and solve the taxonomic problems of the amphibian species of Sierra Nevada de Santa Marta.
- Investigate the natural history, population biology, habitat requirements of each species, as well as emerging diseases, their control in natural ecosystems, invasive species and other identified threats.
- Long-term monitoring of amphibian populations in Sierra Nevada de Santa Marta, especially of priority species.

ACTIVITIES

INDICATORS

2.1 To develop taxonomy and systematic studies in order to describe new species and solve the taxonomic problems of the amphibian species of Sierra Nevada de Santa Marta.

Scientific and informative publications. Informative printed material.

2.2 Carry out research aimed at determining the threats that are affecting or may affect the amphibians in the sector.

Technical reports. Undergraduate and / or graduate thesis developed. Database with identified, categorized and mapped threats.

2.3 Research on the natural history, ecology and vulnerability to epidemics and global environmental change of the prioritized species of amphibians from Sierra Nevada de Santa Marta.

Reports of studies carried out on the natural history, ecology and vulnerability of the prioritized species of amphibians. Undergraduate and / or graduate thesis.

2.4 Inventory of invasive species (flora and fauna) that can affect amphibians in Sierra Nevada de Santa Marta

Technical reports. Undergraduate and / or graduate thesis. Database with identified and mapped invasive species that affect Sierra Nevada de Santa Marta amphibians.

2.5 Long-term monitoring of amphibians from Sierra Nevada de Santa Marta, with emphasis on populations of priority amphibian species.

Monitoring protocol with biosafety standards. Technical reports. Scientific and informative publications.

2.6 Integrate park rangers and volunteers in monitoring processes of amphibians in the Sierra Nevada de Santa Marta and surrounding sectors through automated citizen science processes.

Memories of systematized field activities. Number of people involved in monitoring activities.

Line of Action 3: Conservation in situ and ex situ

Specific objectives

- Promote in situ conservation processes for amphibian species in the Sierra Nevada de Santa Marta, by increasing the state's protected territory, reducing threats and restoring the habitat of threatened species.
- Breeding and ex situ management (ex situ management programs, assisted reproduction) for endemic and threatened amphibian species of the Sierra Nevada de Santa Marta.
- Long-term safeguarding of the DNA of all amphibian species in the Sierra Nevada de Santa Marta and surrounding areas.



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ACTIVITIES	INDICATORS
3.1 Identify priority amphibian sites that are not currently within protected areas.	Technical report. Thematic maps. Prioritized list of potential sites and species involved.
3.2 Explore land acquisition options for important amphibian conservation sites that can be integrated into existing protected areas.	Technical report. Thematic maps.
3.3 Integrate the management of priority sites for amphibians within other local planning processes of the territory.	Technical report. Thematic maps.
3.4 Reduce the rate of habitat loss, expand or restore favorable habitat areas for threatened amphibian species.	Local PDOT or protected area management plans include amphibian species as focal management elements.
3.5 Implement methods of efficient and sustainable use of existing pastures, increasing fertility and using rotational grazing, in addition to reducing abandonment.	Integrated recovery program encompassing research, management and community engagement
3.6 Identify and implement community tourism activities as an alternative for strengthening local livelihoods.	Infographics. Thematic maps. Training workshops. Technical report. Thematic maps.
3.7 Establish fire prevention and management strategies in key sites for amphibian conservation.	Training workshops.
3.8 Prevent the introduction, control and eradicate invasive species (pines, trout, bullfrog)	Training workshops. Eradication Campaigns Technical Reports
3.9 Implement ex situ conservation processes (ex situ management programs, assisted reproduction) for endangered endemic species of amphibians from Sierra Nevada de Santa Marta.	Protocols on the capture of specimens of ex situ breeding focal species. Cooperation agreement between research entities and ex situ breeding centers with the capacity to maintain sustainable captive populations.
3.10 Identify priority species and sites for assisted recolonization processes.	Endangered species of amphibians included in ex situ conservation programs.
3.11 Extract DNA and carry out all the technical procedures that allow to preserve the samples of the amphibian species of the Sierra Nevada de Santa Marta and surrounding areas.	Report evaluating suitable areas that could serve as reintroduction sites for captive-bred amphibian species.
<p>Line of Action 4: Communication, education and training</p> <p>Specific objectives</p> <ul style="list-style-type: none"> • Maintain up-to-date and freely accessible information about amphibian species in the Sierra Nevada de Santa Marta for effective decision-making. • Generate a positive perception and attitude to amphibian conservation in the cantons of Loja and Santa Marta. • Apply educational tools that serve so that the population of the cantons Loja and Santa Marta know and value the diversity of amphibians present in the Sierra Nevada de Santa Marta. 	



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ACTIVITIES	INDICATORS
4.1 Maintain a public repository of free access on the amphibian species of the Sierra Nevada de Santa Marta	Database
4.2 Create an environmental communication campaign for the cantons of Loja and Santa Marta, with emphasis on promoting the Action Plan for the conservation of amphibians in Sierra Nevada de Santa Marta.	Document containing the guidelines and specific activities for the development of a permanent communication campaign of the Action Plan in Loja and Santa Marta
4.3 Generate a digital and open access repository with informative and / or educational material on the amphibians of Sierra Nevada de Santa Marta.	Digital storage repository of informative material with open access and with permanently updated information
4.4 Use social networks to improve the perception of the populations of the cantons of Loja and Santa Marta towards amphibians.	Number of publications shared (press releases, photos, videos, songs, etc.) on social networks about the amphibians of Sierra Nevada de Santa Marta
4.5 Develop open houses on amphibians with students of basic education and high school.	Events held in a public place, with the active participation of basic education and high school students (in Loja, El Tambo and Santa Marta)
4.6 Environmental education campaign on invasive species and their local impact.	Events held in a public place, with the active participation of basic education and high school students (in Loja, El Tambo and Santa Marta)
4.7 Generate local projects for the recovery of amphibians in urban areas.	Participatory and inclusive projects generated for the conservation of amphibians that live in urban areas
4.8 Removal of rubble and cleaning of solid waste in the Sierra Nevada de Santa Marta to recover the type locality of the amphibian species.	Debris removal and solid waste cleaning activity along the Sierra Nevada de Santa Marta
4.9 Restoration of abandoned dumps in the Sierra Nevada de Santa Marta sector.	Ecological restoration activities Revegetation of key areas for amphibian conservation
<p>Line of Action 5: Financial sustainability</p> <p>Specific objectives</p> <ul style="list-style-type: none"> • Identify and put into practice financing mechanisms to guarantee the availability of long-term funds for the conservation of amphibians in the Sierra Nevada de Santa Marta and their associated ecosystems. • Identify organizations of different kinds that can strengthen from their scope of governance and action research, monitoring and management processes of the territory involved within the Sierra Nevada de Santa Marta. • Develop a bank of small to large-scale projects that allow management and management actions of the Sierra Nevada de Santa Marta territory in the short and medium term. 	
ACTIVITIES	INDICATORS



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5.1 Develop a mapping of local institutional actors with direct and indirect influence in the Sierra Nevada de Santa Marta to identify possible lines of contributions aimed at the conservation of the site.	Technical document. Database. Map of actors.
5.2 Identify a set of potential donors with an interest in the conservation of threatened amphibians and high Andean ecosystems.	Database. Contact data.
5.3 Formulate a bank of short, medium and long-term projects that become a tool for the management of funds aimed at the conservation of the Sierra Nevada de Santa Marta species.	Technical documents. Databases. Drafted documents. Submitted project proposals.
5.4 Structuring a continuous strategy to obtain funds or investments of various kinds framed in this action plan.	Minutes of meetings. Identified donors. Financial funds obtained
5.5 Articulate joint work strategies with the Wildlife Program of the Sustainable Environmental Investment Fund (FIAS) of the Ministry of the Environment and Water to access conservation funds for amphibians through different strategies	Agreements signed



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**COMUNIDAD
INDÍGENA ARAHUAC**

NIT: 824.002.015-9

