

CONSERVATION PLAN FOR THE NORTH TIGER CAT (*Leopardus tigrinus*), IN MOORLAND OF COLOMBIA.

BOSQUE COLOMBIANO ORG

ABSTRACT

This plan seeks the sustainable conservation of the Northern Tiger Cat (*Leopardus tigrinus*), the smallest feline in Colombia, in the moorland 2,500 to 3,500 meters high, in the Amazon River basin. We will implement 5 strategies based on the feline conservation guidelines of specialists from each Group of the Commission for the Survival of Species IUCN and the conservation objectives of the government of Colombia 2020-2025: conservation, education, monitoring, sustainability and communication.

The first part consists of the bioecological analysis of the target feline; In them, a synthesis of the biological knowledge for each species in the Amazon is made, including a summary of its synonymy and taxonomy, distribution and biology, and conservation status and threats, which include a map of recent records. Each species has associated photos of the animals photographed in the Valley and other photos that illustrate characteristics of special interest to the species. The second part consists of the set of actions to be implemented, either transversal or specific for each species. This initiative is important because it protects the water cycle in the Amazon: it will be carried out in the moorland of Bordoncillo, a flora whose flora traps water with its leaves and releases it through the roots to inject it into the Putumayo River, which flows into the Amazon River. We have the support of the University of the Amazon, and the Kamsá indigenous community, in whose territory the activities of the plan will be developed.



Photo 2. *Leopardus tigrinus*

1. BIOECOLOGY OF THE SPECIES

1.1 Biology of the species

It is part of the guild of the so-called tigrillos and is considered the smallest, with yellow fur on the back and sides, white on the belly and chest, covered by black dots and stripes (Payán and Soto, 2012). Few reports clearly differentiate the oncilla from other congeners. The oncilla's hair is woolly and less thick. It tends to be very confused with the margay (*Leopardus wiedii*), although compared to the margay the oncilla has relatively larger eyes and ears and the snout is shorter. Also, it has a tail of intermediate length in relation to that of the ocelot (*Leopardus pardalis*) and the margay, and additionally, the upper premolars clearly differentiate the oncilla skull from the latter. There are reports of melanic individuals in Brazil and Colombia.

Weight: 1.5-3.2 kg females, 1.8-3.5 kg males (Hunter & Barrett, 2011).



Photo 2. Phototrapping of *Leopardus tigrinus* in the project area. **Source:** BOSQUE COLOMBIANO ORG

The reproductive behavior of this species is for the most part unknown and what little is known is taken from captive data. The heat takes from 3 to 9 days, the gestation lasts approximately 75 days and between 1 to 3 blind pups can be born that open their eyes at 10 days of birth. The lactation period lasts around 12 months and sexual maturity is

reached after 1 or 2 years of age (Hunter & Barrett, 2011).

1.1. Synonymy and Taxonomic Comments

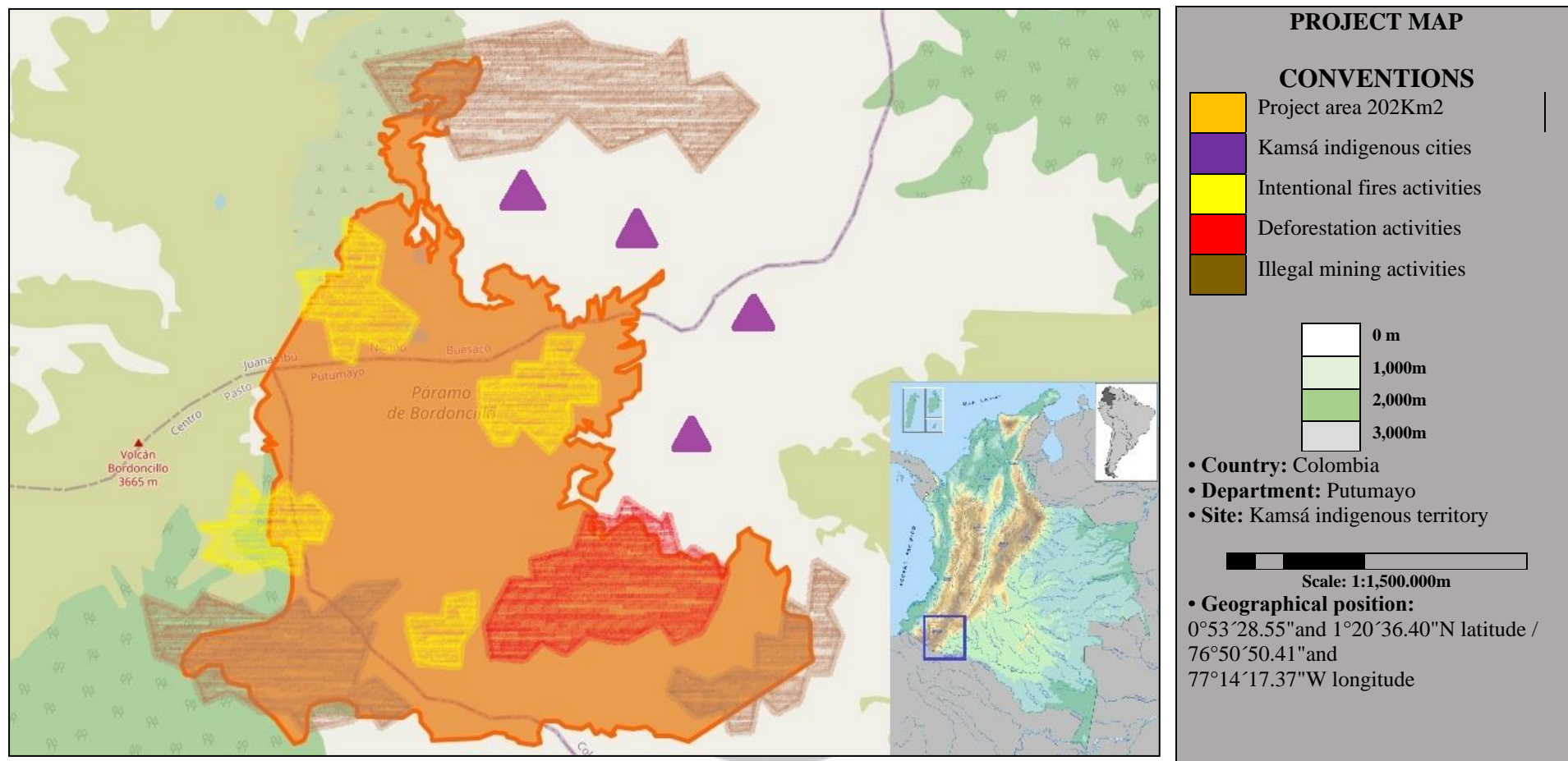
Leopardus tigrinus (Schreber 1775) is also known by the vernacular names of tigrillo, tigrina, and tiger cat. Located in the genus *Leopardus* by Allen (1919), Weigel, (1961), and Kratochvil, (1982) and located in *Oncifelis* by (Hemmer, 1978). But *Leopardus* it is stronger, since the oncilla shares a derived chromosomal number with *pardalis* and *wiedii* (Wurster-Hill, 1973). Synonyms assigned by Pocock (1941), Cabrera (1957) and Hall (1981; Wilson & Reeder, 2005).

1.2. Distribution and Ecology

The oncilla is distributed from Costa Rica to the southeast of Brazil and the north of the Argentine territory (Nowell & Jackson, 1996). However, it is believed that the distribution could be discontinuous and patchy. It has been reported that this species is not found in the Colombian plains or the Paraguayan Chaco, although its presumed absence from the eastern plains should be reviewed. Additionally, no individuals have been found in the area of the Darien Peninsula, which would imply that there would be no connection between the populations of Central America and South America.

There is no clarity of its distribution pattern in Colombia, but an association with medium and high Andean forests has been evidenced. It is believed that in Colombia this species is restricted to ecosystems above 1,200 m.a.s.l. and reaching the habitats of páramos and cloud forests, (Payán & Gonzalez-Maya, 2011). However, there are records in the Amazon and the Guyanese Rupununi savannas (Eisenberg, 1989).

Map 1. Project site, Kamsá indigenous territory, in the Amazon river basin. **Source:** BOSQUE COLOMBIANO ORG



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In Valle del Cauca there are records of the presence of this species: in the Santa Teresa lagoon in the PNN Las Hermosas, in forests near the municipality of Restrepo, in the municipality of Roldanillo within the Regional District of Integrated Management RUT Nativos, in the PNR El Duende and in the Cañón Soil Conservation District del Río Grande (Muñoz et al., 2013; Bolivar et al., 2015, Arana et al., 2015). During the present study, oncillas were recorded again by means of photo-trapping, in the Cerro El Inglés, the Serranía de los Paraguas and in the municipality of El Cairo (Western Cordillera). Also, there was direct observation by researchers on the pathway between Albán and El Cairo (Moreno-Foglia et al., 2015).

The oncilla is a species with solitary habits that has mainly been found in subtropical forests and montane forests. In general, they tend to prefer cloud forests and high altitude habitats such as moorland. Oncilla populations are believed to be negatively impacted by the presence of ocelots (Oliveira et al., 2010). The voice of the genus *Leopardus* is very similar to that of domestic cats and consists of meowing and snorting in defense.

1.3. Threats and Conservation Status

The oncilla is currently considered a species in “Vulnerable” (VU) status, after having been in the “Near Threatened” (NT) category in 2002 (de Oliveira et al., 2008b). It is considered that their populations can be highly localized in small areas of residence. In addition, high population densities have been found when ocelots are scarce in the same area, which indicates that ocelots have a great impact on oncilla populations, or in other words, the “ocelot effect” is presented by competition (Oliveira- Santos et al., 2012).

This could indicate that the vast majority of their populations are kept outside of protected areas or low-quality habitats. The CVC in Valle del Cauca assigned this species the category of SU, that is, it is considered unclassifiable due to the lack of information, so they are required many more studies.



Photo 3. *Leopardus tigrinus* in the project area. **Source: BOSQUE COLOMBIANO ORG**

Current threats attacking this species range from habitat loss, fragmentation, road accidents, illegal traffic, to predatory hunting, poultry. The populations of these animals are quite fragmented and are increasingly reduced by the conversion of their habitats into plantations and grasslands. All this without adding the previously undetected natural threat of dynamics of predator-competitor interaction with ocelots. *Leopardus tigrinus* also needs to be evaluated at the subspecies level since there is a possible genetic structure between the different populations given their high genetic diversity (Trigo et al., 2013). Therefore, the evaluation of the taxonomy of this species is a priority in research.

2. ACTION PLAN FOR THE MANAGEMENT AND CONSERVATION OF Northern tiger cat (*Leopardus tigrinus*) IN THE AMAZON

For the development of the management and conservation plan of *Leopardus tigrinus* for the Amazon, strategies defined in 6 lines of action are proposed, which are intended to be executed in the short, medium and long term. The short term corresponds to the time invested in the implementation of the program (approximately 5 years), the medium term times after 5 and up to 10 years and the long term to times greater than 10 years.



Photo 3. Phototrapping of *Leopardus tigrinus* in the project area. **Source:** BOSQUE COLOMBIANO ORG

2.1 VISION

It is expected that by 2024, the management and conservation of the Northern Tiger Cat (*Leopardus tigrinus*) will have been achieved in the Colombian Amazonas, in which the participation of municipal and local environmental institutions of a public or private nature and the communities that have influence in the areas where it is distributed, based on scientific and popular knowledge, in order to achieve a mutual benefit man-nature.

2.2 GENERAL OBJECTIVE

The main objective of the Regional Management Plan for the Northern Tiger Cat (*Leopardus tigrinus*) in the department of Amazonas is to generate strategies focused on the protection, recovery and knowledge of the species and the ecosystems in which it inhabits through coordinated and concerted

actions. between the actors directly and indirectly involved in the conservation and management of this species.

2.3 SPECIFIC OBJECTIVES

(i) Evaluate, recover and protect current and potential habitat areas for the Northern Tiger Cat (*Leopardus tigrinus*) in the different municipalities of the department of Amazonas.

(ii) Design, promote, and execute research and monitoring projects for the Amazon species in protected and priority areas for conservation in the department of Amazonas.

(iii) Identify, evaluate and apply strategies to reduce the persecution of the species in the areas where it has been registered, generating conflict of predation.

(iv) Develop ex-situ conservation actions to support potential conservation programs.

(v) Implement environmental education actions in the communities that allow the development of a conservation program for the species in the department of Amazonas, considering the important role of the northern tiger cat (*Leopardus tigrinus*) as an umbrella species in the ecosystems where it lives.

(vi) Generate mechanisms for information and dissemination of the studies that are developed around the species so that they can contribute and strengthen the management program of the species in the department of Amazonas.

(vii) Generate cooperation networks with regional and national institutions for the implementation of the management and conservation plan for *Puma concolor* in the Amazon.

3. LINES OF ACTION

3.1. Line of Action 1. Evaluation, Recovery and Protection of Habitat

Goal: Carry out the evaluation of areas of the department of Amazonas in order to recover and protect the habitat of <i>Leopardus tigrinus</i> .		
Objective: To generate the necessary knowledge of the conservation status of the areas where the <i>Leopardus tigrinus</i> inhabits in the department of Amazonas.		
Actions: <ul style="list-style-type: none">• Evaluate the status and carry out the characterization of the habitat in the areas where there are records of the <i>Leopardus tigrinus</i> species.• Protect current areas and recover areas defined as priorities for the conservation of <i>Leopardus tigrinus</i>.• Evaluate, design and implement biological corridors between habitats that guarantee the flow of individuals in the protected areas.• Identify factors of anthropic pressure in the ecosystems that the species occupies and propose solutions to them.	Expected results: <p>Knowledge of the current state, establishment and recovery of the areas where the presence and probable presence of <i>Leopardus tigrinus</i> is registered in the different municipalities of the department of Amazonas.</p>	Indicators: <ul style="list-style-type: none">• Real knowledge of the state of the habitat and its characterization.• Identification and establishment of protected and priority areas for recovery.• Establishment of biological corridors.• Identification of anthropic factors that affect the habitat of the species

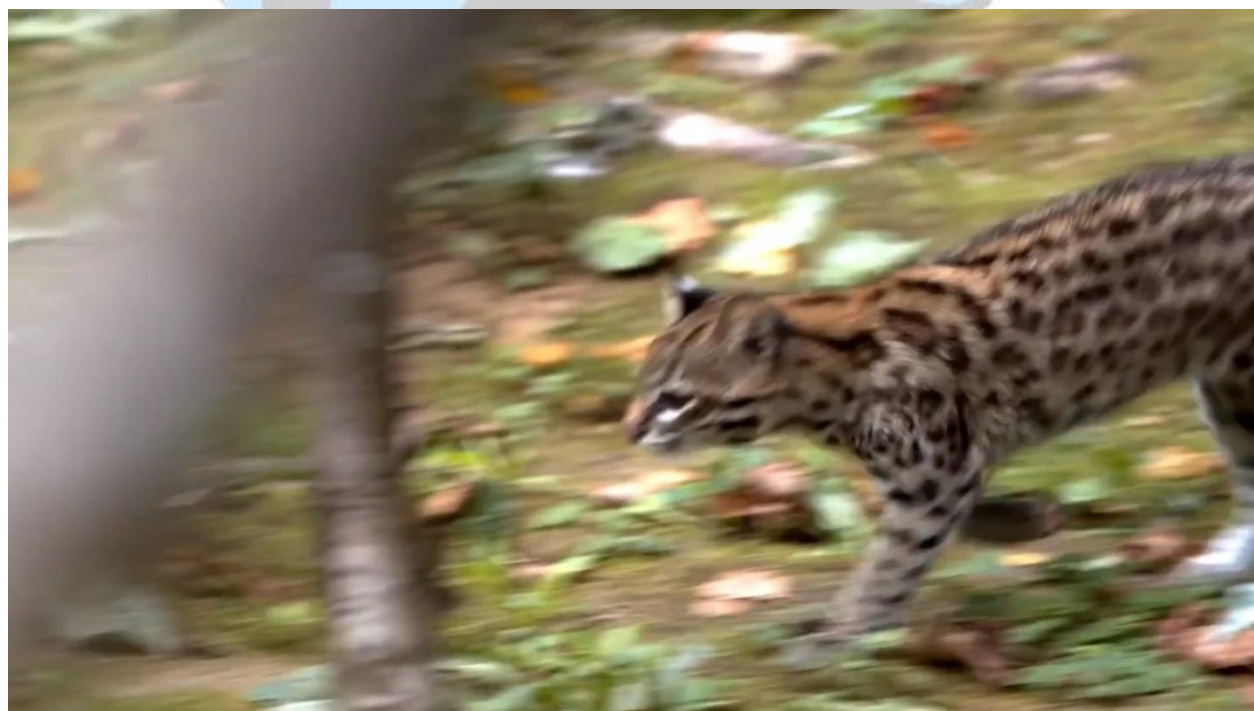


Photo 4. *Leopardus tigrinus* in the project area. Source: BOSQUE COLOMBIANO ORG

3.2. Line of Action 2. Research and Monitoring of the Species

Goal: Promote and Consolidate <i>Leopardus tigrinus</i> research and monitoring programs in the department of Amazonas.		
Objective: To generate the necessary knowledge of <i>Leopardus tigrinus</i> in the department of Amazonas in order to protect, recover and manage its populations.		
Actions: <ul style="list-style-type: none"> • Conduct baseline studies that allow knowing the current status of the <i>Leopardus tigrinus</i> populations in the department of Amazonas. • Standardize methodologies for the evaluation and monitoring of <i>Leopardus tigrinus</i> in the department of Amazonas. • Carry out studies on the distribution and population densities of <i>Leopardus tigrinus</i> in the different areas of the department of Amazonas. • Promote and rescue the knowledge of the popular traditions around the species in the different areas where it is occupied. • Monitor protected and priority conservation areas for the species. • Review the scientific reference collections and secondary information in order to expand the knowledge of the species. 	Expected results: Knowledge of the distribution and current state of <i>Leopardus tigrinus</i> populations in the department of Amazonas.	Indicators: <ul style="list-style-type: none"> • Preparation of the real distribution map of <i>Leopardus tigrinus</i> in the department of Amazonas. • Knowledge and dissemination of the state of conservation and vulnerability of the populations of <i>Leopardus tigrinus</i> in the department of Amazonas. • Standardized methodologies for monitoring populations and habitats. • Collection of information on museum specimens and georeferencing of individuals in the different areas of the department.

3.3. Line of Action 3. Reduction of Hunting Activities and illegal trafficking.

Goal: Consolidate conservation strategies aimed at avoiding and reducing the hunting of <i>Leopardus tigrinus</i> in the department of Amazonas		
Objective: Reduce the level of hunting of <i>Leopardus tigrinus</i> in the department of Amazonas.		
Actions: <ul style="list-style-type: none"> • Present alternatives for managing the human-feline conflict. • Promote the creation of environmental education programs in the areas where <i>Leopardus tigrinus</i> lives. • Educate and sensitize the surrounding communities to the areas where <i>Leopardus tigrinus</i> has been recorded to avoid actions that lead to the detriment of the populations of this species. 	Expected results: reduction in hunting levels registered for <i>Leopardus tigrinus</i> in the department of Amazonas.	Indicators: <ul style="list-style-type: none"> • Sustaining and increasing the number of individuals of <i>Leopardus tigrinus</i> in the different areas of the department of Amazonas.

<ul style="list-style-type: none"> • Promote actions focused on the preservation of the habitat of <i>Leopardus tigrinus</i> to guarantee its sustainability through the consumption of natural prey. • Strengthen retaliation hunting control programs developed by environmental authorities in areas where the presence of felines is registered. 		
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Photo 6. *Leopardus tigrinus* in the project area. **Source:** BOSQUE COLOMBIANO ORG

3.4. Line of Action 4. Environmental Education and Community Participation

<p>Goal: Create, consolidate and implement education and awareness programs at the regional level that contribute to the conservation and management of <i>Leopardus tigrinus</i> in the department of Amazonas.</p>		
<p>Objective: Promote education and awareness programs through community participation for the conservation and management of <i>Leopardus tigrinus</i> and its habitats in the different areas of distribution of the species in the department of Amazonas.</p>		
<p>Actions:</p> <ul style="list-style-type: none"> • Design education and action programs in a concerted and participatory manner with the communities of the protected and priority areas for the conservation and management of <i>Leopardus tigrinus</i>. 	<p>Expected results:</p> <p>Design and implementation of education and awareness programs through community participation in the <i>Leopardus tigrinus</i></p>	<p>Indicators:</p> <ul style="list-style-type: none"> • Environmental education and community participation programs for the conservation and management of <i>Leopardus tigrinus</i> in the department of Amazonas agreed, implemented and replicated in the different areas of distribution of the species.

<ul style="list-style-type: none"> • Train local communities in the areas involved in the different municipalities of the department of Amazonas to lead programs focused on the protection and conservation of <i>Leopardus tigrinus</i>. • Join efforts among municipal environmental entities to program and execute community participation activities that involve the protection and recovery of ecosystems in the <i>Leopardus tigrinus</i> distribution areas. • Evaluate the coverage and scope of community education and awareness programs in order to make corrections during their development. • Design and integrate education and awareness programs focused on the conservation of <i>Leopardus tigrinus</i> and its habitats in the department of Tolima in basic primary and secondary education. • Design and implement environmental education programs that highlight the biological, ecological and cultural importance of <i>Leopardus tigrinus</i> in the distribution areas of the species in the department of Amazonas. 	<p>distribution areas in the department of Amazonas.</p>	<ul style="list-style-type: none"> • Coordination between municipal environmental entities for the implementation of education and awareness programs for <i>Leopardus tigrinus</i> in the department of Amazonas. • <input type="checkbox"/> Personnel from the communities trained to lead environmental education and awareness programs focused on the conservation and management of <i>Leopardus tigrinus</i> in the department of Amazonas.
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Photo 7. *Leopardus tigrinus* in the project area. **Source:** BOSQUE COLOMBIANO ORG

3.5. Line of Action 5. Information and Disclosure

<p>Goal: Generate an information base on all aspects related to <i>Leopardus tigrinus</i> and disseminate it in the different areas of the department of Amazonas.</p>		
<p>Objective: Promote mechanisms for the compilation and dissemination of information on biological, ecological, cultural aspects and the current state of conservation of <i>Leopardus tigrinus</i> in the department of Amazonas.</p>		
<p>Actions:</p> <ul style="list-style-type: none"> • Design and implement a database of all written or audiovisual material that is generated from studies related to any aspect of <i>Leopardus tigrinus</i> in the department of Amazonas and make it known to the scientific community and the general public. • Obtain secondary information related to <i>Leopardus tigrinus</i> in the department of Amazonas in order to organize, record and disseminate it among the <i>Leopardus tigrinus</i> distribution areas in the department of Amazonas. • Strengthen the mechanisms for the exchange of information, experiences and material generated from the environmental awareness and education programs of <i>Leopardus tigrinus</i> in the department of Amazonas. • Establish an information network with other regions of Colombia where species management plans or investigations are being carried out under ex-situ and in-situ conditions. 	<p>Expected results:</p> <p>Information on aspects related to Puma concolor in the department of Amazonas and its dissemination in all areas involved in the conservation and management of the species.</p>	<p>Indicators:</p> <ul style="list-style-type: none"> • Information base generated and compiled on <i>Leopardus tigrinus</i> for the department of Amazonas. • Formation of information networks for the exchange of knowledge on everything related to <i>Leopardus tigrinus</i> at the local and national level. • Preparation and dissemination of educational material generated from the academic community and / or population involved in the conservation and management of <i>Leopardus tigrinus</i> in the department of Amazonas.

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Photo 8. Leopardus tigrinus in the project area. **Source:** BOSQUE COLOMBIANO ORG

3.6. Line of Action 6. Policies and Institutional Management Instruments

Goal: Promote and strengthen local and regional management and cooperation for the implementation of the Leopardus tigrinus management and conservation plan for the Amazon.

Objective: Consolidate the management capacity and local and regional inter-institutional work for the implementation of the Action Plan for the management and conservation of Leopardus tigrinus in the department of Amazonas.

Actions:	Expected results:	Indicators:
<ul style="list-style-type: none"> • Support and strengthen local, regional, national and oriented towards the conservation of Leopardus tigrinus in the department of Amazonas. • Design and implement projects and research on Leopardus tigrinus in the department of Amazonas. • Promote the realization and consolidation of cooperation agreements • interinstitutional institutions that exist to channel economic, logistical and human resources that allow the implementation of the actions of the plan. • Promote institutional management to channel resources of all kinds not only at the local level but also at the national level that allow the execution of actions to be carried out during the short, medium and long term. . 	<p>Strengthening of cooperation links institutions that guarantee the implementation of the Regional Management Plan for the conservation of Leopardus tigrinus in the department of Amazonas.</p>	<ul style="list-style-type: none"> • Execution of inter-institutional agreements • Design and implementation of programs • Allocation of human, logistical and financial resources

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