

The first year of the *Saguinus leucopus* Conservation Program

By: Alba Lucia Morales Jiménez (Fundación BioDiversa, Colombia) and Eric Bairrão Ruivo (Jardim Zoológico de Lisboa, Portugal)

ACKNOWLEDGMENTS

This conservation program has been possible thanks to the enthusiasm, hard work and support of many people and institutions. We would like to thank the support to the European Association of Zoos and Aquariums (EAZA) and the motivation of Eric Bairrão Ruivo and the Lisbon Zoo. This is the first year for the *Saguinus leucopus* conservation program. This project is supported by 18 European institutions in the EAZA, seven Colombian zoos, two government corporations of Colombia and two nonprofit organizations. Special acknowledgments to:

- The Colombian zoos (Piscilago, Santacruz, Santa Fe, Cafam, Jaime Duque, Barranquilla, Matecaña, and Cali) and The Colombian Association of Zoo and Aquariums (ACOPAZOA). Without their collaboration this project would not be possible.
- The 18 European institutions that support this initiative: Apeldoorn (Netherlands), Beauval (France), Belfast (United Kingdom), Bristol (United Kingdom), CEPA (France), CERZA (France), Chester (United Kingdom), Doué-la-Fontaine (France), Faunia (Spain), Jersey (United Kingdom), La Palmyre (France), Lisbon (Portugal), London (United

Kingdom), Mulhouse (France), Palms Oasis (United Kingdom), South Lakes (United Kingdom), La Vallée des Singes (France), and Zodiac Zoos (Netherlands).

Finally, a special thanks to all the staff working in the Colombian Zoos and Government agencies for their hard work to make this program possible. We would like to thank specially the coordinators of Veterinary and Nutrition, Carolina Falla and Sandra Gomez.

Ex-situ Projects

1. Captive breeding program of *Saguinus leucopus*

The starting point was the planning of the First Workshop on Captive Management of the silvery brown tamarin (*Saguinus leucopus*) in Colombia. We began the organization of this workshop in August of 2005 with the preparation of the program, the conferences, and establishing contacts with the expositors and participants. Dominic Wormell, Bryan Carroll and Eric Ruivo designed the model enclosure to be implemented in the program. Several modifications were done to the first draft according with the conditions of the weather and the financial capacities of this program.



First workshop on captive management of the silvery brown tamarin (*Saguinus leucopus*) in Colombia

LOCATION: Piscilago Park and Zoo. 104 Km to Girardot, Colombia
DATE: 10 - 13 January 2006

Figure 1. Participants in the first workshop.

The workshop counted with the participation of 27 people from 16 institutions. The institutions were: SantaCruz Zoo, Santa Fe Zoo, Cali Zoo, Piscilago Zoo, Jaime Duque Zoo, CAFAM Zoo, Ocarros Zoo, CORNARE, CORANTIOQUIA, URRAS, Fundación Nativa, Asociación

Colombiana de veterinarios de Vida Silvestre, Durrell Wildlife Jersey Zoo, Bristol Zoo, Lisbon Zoo and Fundación BioDiversa Colombia (Figure 1).

The workshop's approach was theoretical and practical. The objective was to give the guidelines for the management in captivity of *Saguinus leucopus* base on the experience that European zoos and Colombian zoos have on Callitrichids. We counted with the participations of the six teachers from European and Colombian institutions: Eric Bairrao Ruivo (Lisbon Zoo), Dominic Wormell (Jersey Zoo), Bryan Carroll (Bristol Zoo), Alba Lucia Morales Jimenez (Fundacion BioDiversa Colombia), Sandra Gómez (Santa Cruz Zoo) and Carolina Falla (Piscilago Zoo) (Figure 2).



Figure 2. Teachers in the workshop: From left to right: Eric Ruivo, Dominic Wormell and Bryan Carroll.

The workshop lasted four days, the first three were theoretical and practical and the last one was practical and the discussion of the action plan for this year. The first day we had different presentations such as: Systematic and taxonomy of Callitrichids; Biology, natural history and distribution of *Saguinus leucopus*; Conservation problems on *S. leucopus* populations and its habitat; The *S. leucopus* Conservation program 2006-2010. These talks were the base line to give all the participants a better idea of this species and others close related. Also, these talks gave them

information about some research that has been done in the wild and can be very useful in captive management.

In the second day we had presentations on animal record keeping: institutional data bases and the studbook; Standardization of data collection in Veterinary (necropsies, clinic records), in Biology (morphometry, dental formula, ethogram, time budget and space use), and Nutrition (diet balance and weight control). With this sessions we wanted to give the participants a better idea of how record are important for a better management of the animals and its populations. Also, we wanted to standardize the way of take data in veterinary, nutrition and biology. These will facilitate the analysis of information to understand why these animals are dying in captive institutions.

The third day we talked about how to take care of the silvery brown tamarins in captivity: adequate conditions and recommendations; Enclosure design; Nutritional issues; Environmental enrichment; Training; Healthcare; and Transportation.

The practical aspects of the workshop covered discussions about the enclosure designed by the callithrichid experts. We discussed about the importance of the cage dimensions and the importance of the appropriated nets, satellite cages and tunnels. We did a session in enclosure enrichment to build a better and complex environment for the animals. We had two model enclosures, which were constructed on Piscilago Zoo with the recommendations of the program, based on the design of Dominic Wormell. As the workshop went along, it was possible to exchange knowledge and experience between the participants, about the callithrichid management with emphasis on the grey titi monkeys (Figure 3, 4).



Figure 3. Practical session of discussion on the model enclosure designed by the callithrichid experts.



Figure 4. Session of environmental enrichment in the model enclosure

We did a practical session to collect behavioral data, to test the ethogram prepared for the program and to learn how to use the formats designed for the data collection. We had the opportunity to discuss and improve the ethogram and also the participants learned how to take the data and what are the problems that they can find initiating a behavioral study (Figure 5). The discussion about data collection, permitted to create the standard formats for data

Veterinary: Necropsies, Clinic records and biology information: Morphometry, Dental Formula, Ethogram.



Figure 5. Discussion about the ethogram and practical session in behavioral data collection.

Finally, we released two couples of *S. leucopus* into the new model enclosures and the participants had the opportunity to observe that changes in behavior of the animals. The pairs identified the nets immediately and started using them. Also, they started marking the different elements in the enclosures (Figure 6, 7).



Figure 6. On the left the old enclosure and on the right the model enclosure with environmental enrichment.



Figure 7. *Saguinus leucopus* in the new model enclosure

The workshop was a good experience and the participants learned about many aspects of the silvery brown tamarin. We established means of communications to advance in the development of the *Saguinus leucopus* conservation project 2006-2010. We created the yahoo group *S. leucopus*: Grey Titi conservation program. The e-mail is sleucopus@gruposyahoo.com. The idea of this

group is to have a space to exchange information and discuss any aspects about the conservation program, and inform the advances of each institution.

The institutions engaged with the Captive breeding program of *Saguinus leucopus*, to construct the reproduction enclosures are: Piscilago Zoo, CAFAM Zoo, Santa Fe Zoo and Santa Cruz Zoo.

The first successful birth in captivity has already happen. The first babies were born at Piscilago Zoo in the new cages we built and under a new husbandry protocol (figure 8). We also have newborns in Santacruz and Santa Fe Zoos.



Figure 8. First babies born in the program at Piscilago Zoo

At this point we have signed agreements with SantaCruz Zoo, Santa Fe Zoo, Piscilago Zoo and CAFAM Zoo. We have built enclosures these entire institutions as follows (Figure 9):

- SantaCruz zoo: 4 enclosures
- Cafam Zoo: 4 enclosures
- Santa Fe Zoo: 4 enclosures
- Piscilago Zoo: 2 enclosures and 2 islands



Figure 9. Enclosures at Piscilago, Santa Fe and Cafam Zoos

2. Distribution of transponders and readers

Following a request from the *Saguinus leucopus* conservation program, we received 100 transponders and 9 readers from several European Zoos. These were distributed among all participants in the program as follows:

Picilago zoo: 20 transponders and one reader

Cafam Zoo: 15 transponders and one reader

Santa Fe: 15 transponders and one reader

Cornare: 50 transponders and two readers

Santacruz: one reader

The three readers left are going to: Corpocaldas, Cortolima and Barranquilla as soon as they join the program.

Therefore, we can now be sure that all animals in the program are correctly identified and we will also cooperate with rescue centers in identifying their animals.

3. Studbook for *Saguinus leucopus*

The Studbook is complete and includes information from Matecaña Zoo, Barranquilla Zoo, Piscilago Zoo, Cali Zoo, Santa Cruz Zoo, Santa Fe Zoo and Jaime Duque. All the information is kept in Sparks 1.5 software. The program is trying to obtain information from rescue centers (CORNARE AND CORANTIOQUIA rescue centers), however this is a long process as it requires permits from the Ministry of Environment. These permits are being processed by the Ministry now, and are expected to be available next year.

The studbook of the “silvery-brown tamarin” or “titi gris” has data for 137 animals, of which 82 have died, were transferred to rescue centers or have disappeared. This means that around 70% of the animals that have been in the Zoo collections have died or disappeared. The silvery-brown tamarins that have been held in captivity are mainly from the wild (121 individuals). These wild animals entered collection mainly from donation or from confiscated animals. These animals

arrive at zoos with many diseases, stress and health problems. Just, 12% have been born in captivity (16 individuals), 5 of which have died from unknown causes. This means 31% of the captive born animals have died in the zoo collections. The captive population consists of a near equal proportion of females (62 animals) and males (65 animals) with 10 individual whose sex has not yet been determined.

4. Support to rescue centers in Antioquia

We visited two rescue centers in the department of Antioquia, northwest of Colombia (Figure 10). The first was “La Montañita” that is the rescue center of CORNARE (Governmental corporation of Antioquia) the animals that are confiscated by the authorities arrive to this place. “La Montañita” has many problems principally in the facilities; for this reason CORNARE will transfer the rescue center to the farm “Los Olivos”. In this new place the rescue center will be building with the best requirements for the animals. The idea is have an area of quarantine, rehabilitation and reintroduction. In this point the conservation program will give financial support to construct the four cages, with the indication of the expert in management callitrichids, the design are made by Dominic Wormell.

The second rescue center that we visited was the CAV (Metropolitan area of Medellín), many animals arrives to this place every day, some times the space is not enough. We have the opportunity to discuss about some of the improvements that this rescue center has shown in the last months and the possibility to keep improving the facilities in the future. The conservation program suggested some designs to keep in main to construct new cages.



Figure 10. CORNARE rescue centers: La Montañita and Los Olivos; and CORANTIOQUIA rescue center: CAV

We have signed an agreement with CORPOCALDAS and CORNARE to work together on the conservation of this species. CORPOCALDAS has started a rescue center for this species and we are going to provide advice for the construction of enclosures for this new center.

5. National Action Plan for the conservation *Saguinus leucopus*

We sent a letter to the ministry of environment asking for support to our conservation program and we received a positive answer from them (figure 11). We also send this letter to CORTOLIMA (other government institution that is in the distribution area of *S. leucopus*) and we received also a positive answer from them (figure 12).



Ministerio de Ambiente, Vivienda y Desarrollo Territorial
Dirección de Ecosistemas
República de Colombia

MINISTERIO DE AMBIENTE, VIVIENDA Y DESARROLLO T.
31/8/2006 12:15:55 FOLIOS: 1 ANEXOS: 0
AL CONTESTAR CITE: 2100-E2-73056
TIPO DOCUMENTAL: RESPUESTA SOLICITUD
REMITA: DIRECCION DE ECOSISTEMAS
DESTINATARIO: FUNDACION BIODIVERSA

Bogotá, D.C. 31 AGO 2006

Doctora
ALBA LUCIA MORALES JIMENEZ
Fundación Biodiversa
Calle 70ª No 55-27 Apto 102
Bogotá

Estimada Doctora Morales:

En respuesta a la comunicación que usted dirigiera al señor Ministro de Ambiente, Vivienda y Desarrollo Territorial, Dr Juan Lozano Ramirez, el 15 de agosto de 2006, radicada mediante No 4120E173050 y a través de la cual nos presenta el Programa de Conservación del Titi Gris (*Saguinus leucopus*) formulado por la Fundación que usted lidera, el Jardín Zoológico Lisbon de Portugal, la Asociación Europea de Zoológicos y Acuarios, algunos zoológicos colombianos y Autoridades Ambientales Regionales como CORANTIOQUIA y CORNARE, y solicita el apoyo de este Ministerio en la ejecución de algunas actividades definidas dentro del Programa, cordialmente le manifiesto lo siguiente:

Para este Ministerio es de relevante importancia apoyar iniciativas de conservación que a lo largo del territorio nacional se generen para garantizar la supervivencia de las especies que se encuentran amenazadas de extinción. Sin duda compartimos con ustedes, que la razón fundamental por la cual esta especie endémica del territorio colombiano se encuentra en mayor grado de amenaza, se deriva del Tráfico Ilegal que desde hace muchos años se viene ejerciendo sobre este recurso faunístico nacional.

En ese sentido y reconociendo que en hora buena y a la par con su iniciativa se viene gestando el trabajo liderado por CORPOCALDAS, con miras a poner en marcha el Plan de acción regional para la conservación del *Saguinus leucopus*, hemos considerado pertinente tratar de articular estas dos iniciativas y darle el impulso nacional que se requiere, a través de la propuesta que este Ministerio empezará a impulsar en el marco de lo que será la "Estrategia Nacional para el control y prevención del Tráfico Ilegal de los Primates No Humanos, en Colombia", la cual se espera estar consolidando dentro de muy poco tiempo con la participación de las diferentes autoridades ambientales del país, en un Taller Nacional que estaremos desarrollando hacia finales de noviembre y al cual oportunamente le estaremos convocando.

Sin duda y a la espera de que en dicho escenario, se puedan estar mostrando avances frente al alcance de dicho programa y con miras de articular acciones a favor de otras especies de primates no humanos, igualmente afectados por la problemática del Tráfico Ilegal, reiteramos nuestro interés como Ministerio de adherirnos a dicha iniciativa y apoyar en la implementación de la misma.

Cordialmente,


LEONARDO MUÑOZ CARDOÑA
Director de Ecosistemas

c.c. Viceministro de Ambiente.

Proyectó: Claudia Rodríguez

Figure 11. Letter from the Ministry of Environment supporting the *Saguinus leucopus* conservation program

Ibagué
S.C.A

CORTOLIMA

2006 OCT -4 A 9:54

0124181

Doctora:
ALBA LUCÍA MORALES JIMÉNEZ
Coordinadora Nacional
Programa de Conservación del Titi Gris
Fundación Biodiversa Colombia
Calle 70ª N° 55-57 Apto 102. Tel. 5733002450745
Bogotá D.C.



Asunto: Radicado Cortolima 9964 del 14 de septiembre de 2006

Respetada doctora:

Para Cortolima es muy importante la protección de las especies, más aún aquellas que se encuentran amenazadas por la destrucción de su hábitat y la cacería ilegal; así, en el momento estamos involucrados en el proceso de conservación del Titi gris; inicialmente le estamos proporcionando los especímenes decomisados de *Saguinus leucopus* al zoológico de Cafam en Melgar, ya que ellos están desarrollando el programa de investigación en reproducción de los mismos, iniciando con etogramas para conocer el comportamiento de la especie, (ex-situ) el cuál es avalado por la Fundación Biodiversa.

Cordial saludo,

LUIS ALBERTO CRUZ COLORADO
Subdirector Calidad Ambiental

Proyecto: DYCC/FAUNA Y FLORA SILVESTRE

"El Medio Ambiente no lo es todo, sin él, el todo es nada, ¡Preservémoslo!"

Cra. 5a. Avda. del Ferrocarril Calle 44 Conmutador: 265 45 51 / 52 / 54 / 55 A.A. 2026 Fax: 265 45 53 - 270 01 20
E-mail: cortolima@cortolima.gov.co
Web: www.cortolima.gov.co
Ibagué - Tolima

Figure 12. Letter from CORTOLIMA supporting the *Saguinus leucopus* conservation program

We also participated in a meeting organized by CORPOCALDAS and the ministry of environment to arrange a National coalition and conservation program for *Saguinus leucopus*. This meeting was held in Manizales and counted with the participation of 6 institutions that are working with this species (Table 1).

Name	Institution	E-MAIL
Clara María Pérez	ISAGEN	cperez@isagen.com.co
Ana María Gómez	ISAGEN	amgomez@isagen.com.co
Silvia Vejarano	Fundación Biodiversa	silviar@fundacionbiodiversa.org
Alba Lucía Morales	Fundación Biodiversa	albalucia@fundacionbiodiversa.org
Derly Yaneth Carrillo	CORTOLIMA	derly.carrillo@cortolima.gov.co
Claudia Rodríguez	MAVDT	crodriguez@minambiente.gov.co
Patricia Agudelo	CORPOCALDAS	patriciaagudelo@corpocaldas.gov.co
Óscar Ospina	CORPOCALDAS	oscarospina@corpocaldas.gov.co herreraoso@yahoo.com
Luz Elena Rueda C.	ACP	presidencia@primatologiacolombia.org lenarueda@yahoo.com

All these institutions agreed to do a national workshop to discuss that conservation national plan for this species and here I present the agenda for that meeting that is going to be held in January of next year:

1. Introduction by the Director of CORPOCALDAS and the Director of the Ecosystems Department at the Ministry of Environment (MAVDT)
2. Diagnostic for the species by the Colombian Association of Primatologists (ACP)
3. Propose Action Plan: Fundación Biodiversa Colombia
4. Workshop Methodology: MAVDT
5. Small groups discussion

6. Plenary
7. Conclusions and compromises
8. Closing statements

In-Situ Projects

1. Current distribution of *Saguinus leucopus* in Colombia and identification of priority areas for conservation

We collected locality information about this species from museum collections specimens: Smithsonian (USA), ICN (National University mammals collection, Colombia) and IAvH (Humboldt Institute, Colombia). Also we obtained information from undergraduate dissertation and three publications. We designed a questionnaire for researchers that have field experience to start the data collection, as they can have recent information of locality data. The information obtained up to today was included in a Geographical Information System (GIS) and we did preliminary models in GARP to predict the potential distribution.

The distribution maps were overlapped with the Colombian forest map and we calculated the potential area of distribution in the past and the changes until 1996 due to forest destruction. The preliminary analysis showed a severe lost of the habitat for this species to 1996 resulting in a habitat destruction of about 89% (Figure 13).

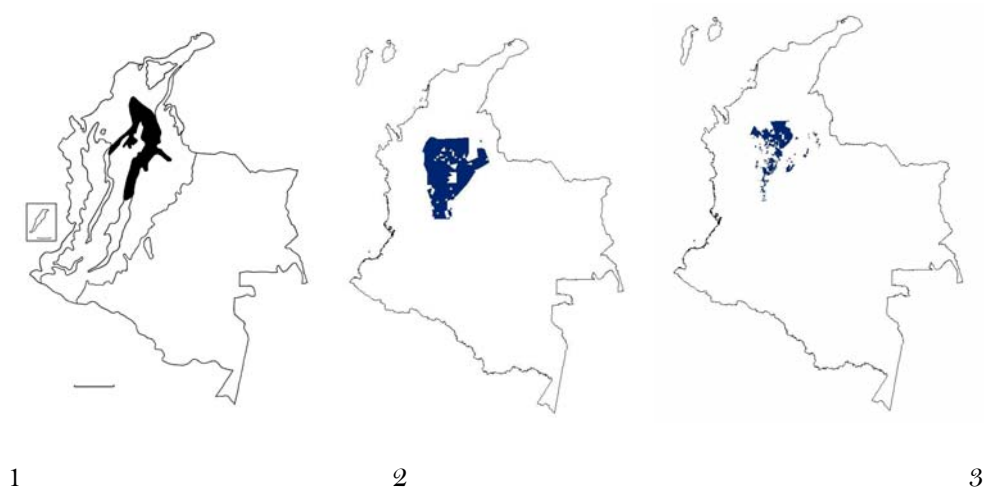


Figure 13. Distribution maps of *Saguinus leucopus*. 1.Hypothetical distribution; 2.Potencial distribution model built with GARP; 3. Distribution left in 1996.

2. Creation of a reserve for *Saguinus leucopus* and *Ateles hybridus* in Colombia as a tool for in-situ conservation.

The program has recognized the need of reserves for this species, as well as for other species in the same geographic area that are also in risk of extinction. The program intends to purchase some land for this purpose and has established contact with the World Land Trust and IUCN for this matter.

We have done field explorations in Antioquia and we have found an appropriate place to buy land for the reserve. This place has many desired characteristics such as good accessibility, non violence problems, great preserve forest, several endangered species including *Saguinus leucopus* and *Ateles hybridus*, but there are still some problems to be solved linked to human pressure (villages in the neighbourhood, hunting, deforestation, etc.), finding the real owners of the land, absence of infrastructures such as drinking water, etc. But it looks very promising.

2. Analysis of possible subspecies of *S. leucopus*.

There is a morphological variant for *S. leucopus* that has been seen in the rescue centers. It is possible that these animals come from the same population. We visited one museum in Colombia and the American Museum of Natural History to examine the specimens and see whether or not there is a morphological variant. On the specimens evaluated there was no evidence of a subspecies. However just 20 specimens were found in these tow collections. It would be important to see the specimens in the ICN collection but to date the curator has not give the permit needed to check these specimens. On the other hand we have evidence in captivity that one of the animals that were phenotypically different (blond head) was painted and its hair was growing showing the natural color (figure 14).



Figure 14. Animal with unusual head color.

Education Project

1. The *Saguinus leucopus* conservation poster

We designed a poster to advertise the project to the people visiting zoos and rescue centers. This poster contains information about the the *Saguinus leucopus* conservation program (figure 15). We also designed a button for the staff that is working in zoos and rescue centers and also for the public that want to support the program (figure 16).



Figure 15. Poster for the Colombian Zoos and rescue Centers. We are adding all the logos from all the supporting institutions.



Figure 16. Button from the *Saguinus leucopus* conservation program.

Events and divulgation

We participated in the XIII Conference of Latin American Association of Parks, Zoos and Aquariums (ALPZA), that took place in Temaikén Zoo in Escobar (Buenos Aires), Argentina (April 24-28). In this event, the Conservation Program of *Saguinus leucopus* was presented as an example of the cooperation between EAZA and ALPZA. Therefore, we presented a poster with complete information about the program and an oral exposition, by the international coordinator, Eric Bairrão Ruivo, who explained the Memorandum of Understanding (MoU) between both associations and how its application is possible (Figure 17).



Figure 17. Participation of the team in the XIII Conference of Latin-American Association of Parks, Zoos and Aquariums (ALPZA).

The *Saguinus leucopus* conservation program is a pilot project that improves the conservation efforts in Latin America with the support of European institutions. The conference gave the opportunity to show the development and the advances of the program to all the participants and members of the ALPZA and, at the same time, to share experiences in management and conservation of Latin American fauna.

We also participated in the Third Forum on in situ Conservation Projects for the European Zoos and Aquaria "Conservation and Partnerships: creation of an European and Latin-American network (May 30th,31th and June 1st, 2nd)" organized by the Zoo of Doué-la-Fontaine in cooperation with the EAZA (Figure 18). We presented the program and the advances of it to the EAZA community and other Latin-American projects. It was a great opportunity to meet new organizations and researchers and to interchange ideas between the different in-situ conservation projects. As previously referred, contact was established with the World Land Trust, in order to create the first natural reserve for *Saguinus leucopus* and *Ateles hybridus* (both endangered species in Colombia).



Figure 18. Participation in the Third Forum on in situ Conservation Projects for the European Zoos and Aquaria "Conservation and Partnerships: creation of a European and Latin-American network.

On the other hand, the program supported Carolina Falla (Veterinarian coordinator for this program) to participate in the Graduate Certificate in Endangered Species Management, March-May 2006. This course was organized by Durrell Wildlife Conservation Trust. During this course, Carolina wrote a proposal to develop a manual entitled: "Health Manual for the silvery brown tamarin (*Saguinus leucopus*) conservation project in Colombia". This manual will cover all the medical topics needed for the successful development of the project, as well as the identification of studies and financial priorities. In this way, the manual will help the Colombian institutions who are working with the species

We participated in the II Zoological Colombian Conference in Santa Martha (November 26 to 2nd of December). We presented the Conservation Program of *Saguinus leucopus* to the zoological community in an oral presentation and also in a stand (figure 19).



Figure 19. Participation of Fundación Biodiversa Colombia in the II Zoological Colombian Conference in Santa Martha.

Awards and international support

The *Saguinus leucopus* conservation program won the EAZA award to the best conservation program during the EAZA Conference in Bath organized by Bristol Zoo in 2005. Additionally, the IUCN Species Survival Commission (SSC) Primate Specialist Group (PSG) has endorsed this conservation program and is now part of it (figure 20).



9 July 2006

Jury Secretariat
II BBVA Foundation Award for Scientific Research in Ecology and Conservation Biology
Fundación BBVA
Paseo de Recoletos, 10
28001 Madrid
España

Dear Sir/Madam

I understand that the Lisbon Zoo has applied to your foundation for support for a conservation programme for the Colombian white-footed tamarin, *Saguinus leucopus*. I would like to stress that this poorly known primate, endemic to the country, is by all accounts undergoing a serious decline in numbers through the massive and ongoing destruction of its forests. It is most encouraging that there are now Colombian researchers and students who are working to address the conservation issues for this species. The initiative of the Lisbon Zoo is an admirable and clear example of the most honourable intentions of zoological gardens to support species conservation *in situ*.

I can confirm that the IUCN Species Survival Commission (SSC) Primate Specialist Group (PSG) wholly endorses this initiative and will, furthermore, be working with the Lisbon Zoo to secure further funds over this and the coming year for this endangered species.

Yours sincerely

Anthony B. Rylands
Deputy Chair - IUCN/SSC Primate Specialist Group

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Fax: +1 202 912 0773

E-mail: a.rylands@conservation.org

Comendado a ser
administrado
19.7.06

Visto em
originaes.
Arheer e Ardeu.
18.7.06



Figure 20. Letter from IUCN Species Survival Commission (SSC) Primate Specialist Group (PSG) supporting the *Saguinus leucopus* conservation program.