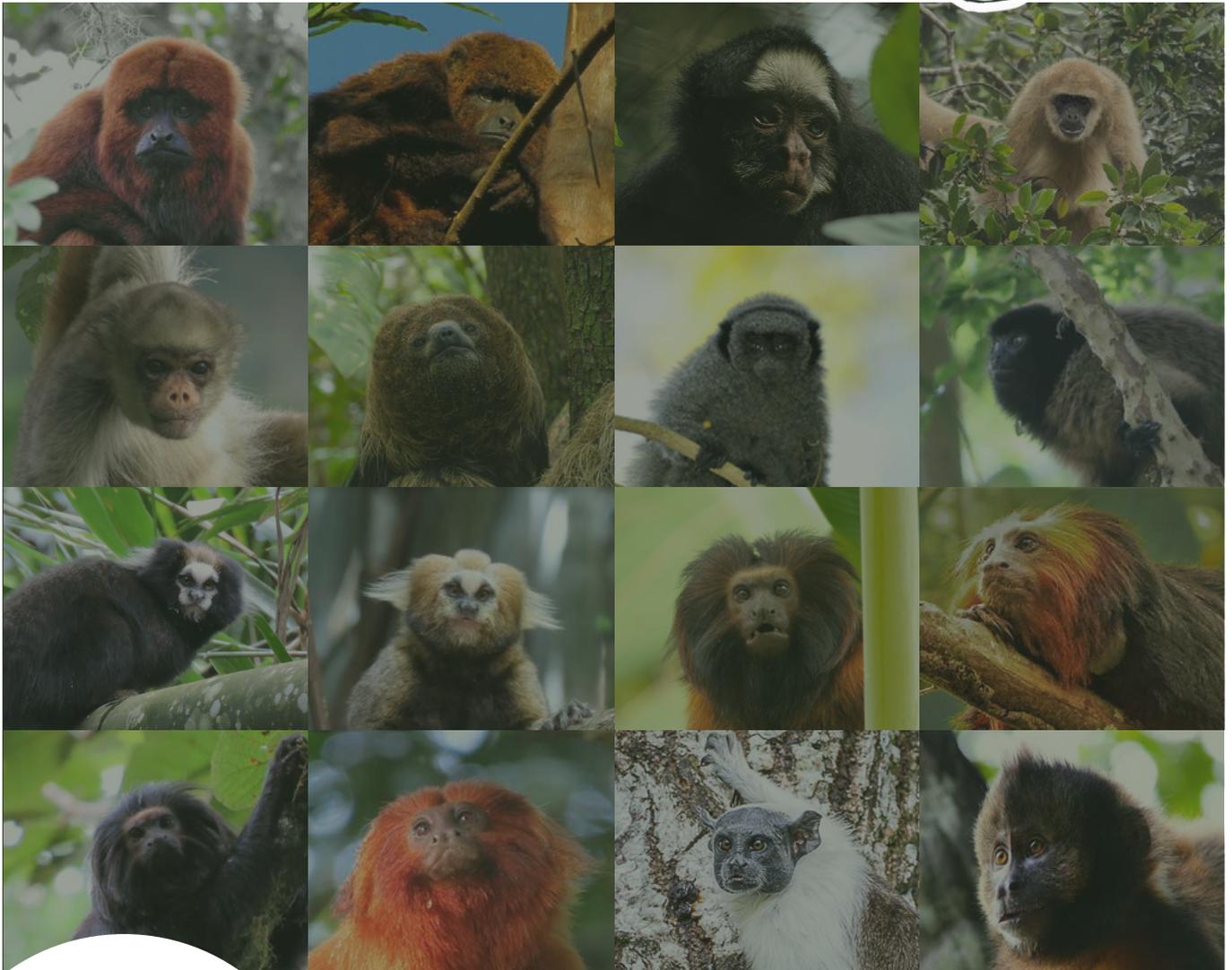


Ex situ Conservation Assessment for

15 Primates & the maned sloth

Virtual workshop | 9 - 20 August, 2021



Organizers



Workshop organized by: National Center for Research and Conservation of Brazilian Primates (CPB ICMBio) in collaboration with the IUCN SSC Conservation Planning Specialist Group (CPSG) | Center for Species Survival Brazil (CSS Brazil), Brazilian Association of Zoos and Aquariums (AZAB), Fundação Parque Zoológico de São Paulo (FPZSP), Copenhagen Zoo and Zoo Berlin.

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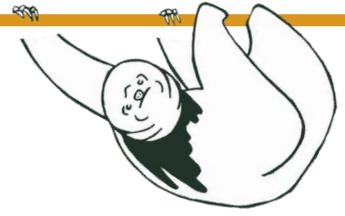
Valença-Montenegro, M. M.; Azevedo, R. B.; Buss, G.; Cordero-Schmidt, E.; Rodrigues, K.C.; Faria, A . R. G.; Rocha, F. L.; Leus, K.; Ludwig, G.; Carvalho, C. M.; Santos, P. M.; Traylor-Holzer, K.; Marques, M. C. (2024). Executive Summary: *Ex situ* Conservation Assessment for 15 Primates and the Maned Sloth. 54 p. ICMBio/CPB.



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Abbreviations and acronyms

| | |
|---------------------------------------|---|
| ALPZA | Latin American Association of Zoos and Aquariums |
| AM | Amazonas state |
| AMLD | Golden Lion Tamarin Association |
| APA | Environmental Protection area |
| AZAB | Brazilian Association of Zoos and Aquariums |
| AZA | Association of Zoos and Aquariums |
| CCSS | Mountain Marmoset Conservation Center |
| CECFAU | Fauna Research and Conservation Center of the State of São Paulo |
| CEMAVE | National Center for Wild Bird Research and Conservation |
| CEPAM | National Center for Research and Conservation of Amazonian Biodiversity |
| CEPESBI | Indaial Biological Research Center |
| CEPLAC | Executive Committee of the Cocoa Farming Plan |
| CETAS | Wild Animal Screening Center |
| COESP | Coordination of Integrated Actions for Species Conservation |
| CPB | National Center for Research and Conservation of Brazilian Primates |
| Comissão Pró-Primatas Paulistas | São Paulo Permanent Primate Protection Committee |

| | |
|-------------|--|
| CPRJ | Rio de Janeiro Primatology Center |
| CPSG | Conservation Planning Specialist Group |
| CR | Critically Endangered |
| CSS Brazil | Center for Species Survival Brazil |
| DEFAU | Fauna Department |
| DRA | Disease Risk Analysis |
| EAZA | European Association of Zoos and Aquariums |
| ECO-DIVERSA | Eco-Diversa Network for Biodiversity Conservation |
| ES | Espírito Santo state |
| EN | Em perigo (Endangered) |
| FA | Yellow fever |
| FIOCRUZ | Oswaldo Cruz Foundation |
| FPZSP | São Paulo Zoological Park Foundation |
| GAT | Technical Advisory Group |
| GEFAU | Wildlife Management in the state of São Paulo |
| GPS | Global Positioning System |
| IBAMA | Brazilian Institute of the Environment and Renewable Natural Resources |
| ICMBio | Chico Mendes Institute for Biodiversity Conservation |

| | |
|------------|---|
| ICMLB | Initiative for Conservation of the Bahian tamarin |
| IDF Brasil | Fauna Defense Institute |
| IF | São Paulo Forestry Institute |
| INEA | State Environmental Institute (Rio de Janeiro) |
| INEMA | Institute of the Environment and Water Resources |
| INMA | National Institute of the Atlantic Forest |
| IPÊ | Ecological Research Institute |
| IUCN | International Union for Conservation of Nature |
| LACTEC | Institute of Technology for Development |
| MG | Minas Gerais state |
| MIB | Muriqui Biodiversity Institute |
| NEMU | Urban Monkeys Extension Center |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| NGO | Non-governmental organization |
| OPA | One Plan Approach |
| PAN | National Action Plan |
| PPMA | National Action Plan for the Conservation of Atlantic Forest Primates and the manned sloths |
| PARNA | National Park |

| | |
|----------|---|
| PCSS | Mountain Marmosets Conservation Program |
| PELC | Lagamar de Cananéia State Park |
| PR | Paraná state |
| PREA | Environmental Education Program |
| FURB | Blumenau Regional University |
| REBIO | Biological Reserve |
| RJ | Rio de Janeiro state |
| RS | Rio Grande do Sul state |
| REVIS | Wildlife Refuge |
| SEMA/RS | Secretariat of the Environment and Infrastructure of the State of Rio Grande do Sul |
| SEMIL/SP | Secretariat of Environment, Infrastructure and Logistics of the State of São Paulo |
| SGLT | Save the Golden Lion Tamarin |
| SIMA-SP | Secretariat of Infrastructure and Environment of the State of São Paulo |
| SISFAUNA | National Wildlife Management System |
| SP | São Paulo state |
| SPVS | Society for Wildlife Research and Environmental Education |
| SSC | Species Survival Commission |
| UC | Conservation Unit |

| | |
|-----------|---|
| UEMG | Minas Gerais State University |
| UENF | North Fluminense State University |
| UERJ | Rio de Janeiro State University |
| UESC | Santa Cruz State University |
| UFAM | Federal University of Amazonas |
| UFMT | Federal University of Mato Grosso |
| UFPA | Federal University of Pará |
| UFRJ | Federal University of Rio de Janeiro |
| UFSM | Federal University of Santa Maria |
| UFV | Federal University of Viçosa |
| UNIFESP | Federal University of São Paulo |
| UNIMONTES | State University of Montes Claros |
| USP | University of Sao Paulo |
| UFRGS | Federal University of Rio Grande do Sul |
| VU | Vulnerable |
| VHF | Very High Frequency |



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Background

The main objective of the workshop was to assess whether *ex situ* management is a suitable conservation tool for the selected species (listed below) and to define what role(s) *ex situ* management can play in the species' overall conservation strategy. In the case of species that already have an established *ex situ* program, such as those included in the cooperation agreement between AZAB and ICMBio, the objective was to confirm or adapt current roles and consider the status/structure of existing programs to implement them.

It is important to mention that the workshop complied with the new ICMBio Normative Instruction N°05/2021, which “Establishes the procedures for the creation and implementation of Population Management Programs for Threatened Species of Brazilian Fauna”, in addition to fulfilling three actions of National Action Plans (PAN):

[PAN Primates of the Atlantic Forest and the Maned Sloth](#). Action 2.2 - “Apply the IUCN / CPSG Protocol (One Plan Approach) to assess the need for *ex situ*, *in situ* or integrated management”.

[PAN Amazonian Primates](#). Action 5.3 - “Develop captive reproduction and management techniques for target species”.

[PAN Pied Tamarin](#). Action 8.7 - “Carry out integrated population management (in situ and *ex situ*) for the conservation of the marmoset, based on PAN protocols”.

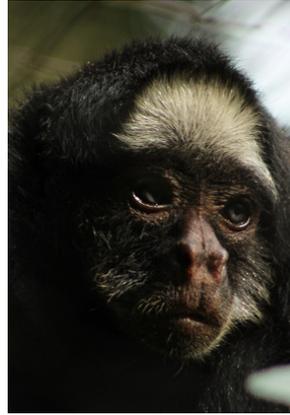
Species assessed



Alouatta guariba clamitans
©Mariano Cordeiro Paired



Alouatta guariba guariba
©Cristine Prates



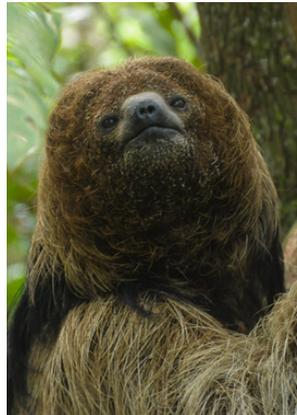
Ateles marginatus
©Francielly da Silva Reis



Brachyteles arachnoides
©Norton Marcus Vinicius dos Santos



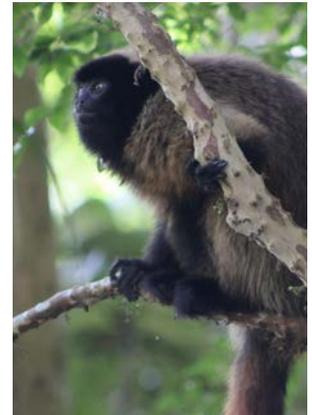
Brachyteles hypoxanthus
©Anderson Israel Gonsalves Ferreira



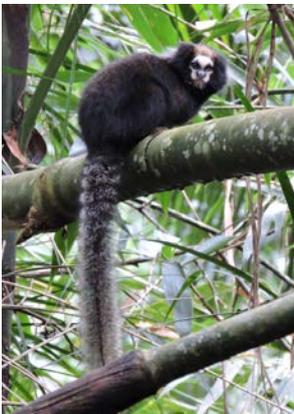
Bradypus torquatus
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Callicebus melanochir
©Adriano Gambarini



Callicebus personatus
©Cintia Corsini Fernandes



Callithrix aurita
©Wagner Rafael Lacerda



Callithrix flaviceps
©Marilyn Mardegan Assunção



Leontopithecus caissara
©Celso Margraf



Leontopithecus chrysomelas
©Igor Inforzato



Leontopithecus chrysopygus
©Hiago Ermenegildo



Leontopithecus rosalia
©Marilyn Mardegan Assunção



Saguinus bicolor
©Diogo Cesar Lagroteria Oliveira Faria



Sapajus robustus
©Luis Francisco Oliveira Pereira Gonzaga

About the workshop

Sessions

A pre-workshop orientation meeting was held before the start of the workshop, on July 27, 2021, to present the objectives of the workshop and its link with the National Action Plans (PAN) as well as to provide information about the species and the methodology for all participants. A presentation was given on the [One Plan Approach \(OPA\)](#) and the [IUCN SSC Guidelines on the Use of Ex situ Management for Species Conservation](#) (IUCN 2014), and to explain the *Ex situ* Conservation Assessment (ECA) process. Additionally, experts presented a general overview of the species to be discussed, including those **with** and those **without** an existing *ex situ* program.

The ECA online workshop took place over eight days during two weeks in August 2021:

| Week 1 | | Week 2 | |
|-----------------------------------|---------------------|---|-------------------|
| Species | Date period | Species | Date period |
| <i>Brachyteles hypoxanthus</i> | 08.09 Morning | <i>Callicebus melanochir</i> | 08.16 Morning |
| <i>Brachyteles arachnoides</i> | 08.09 Afternoon | <i>Callicebus personatus</i> | 08.16 Afternoon |
| <i>Saguinus bicolor</i> | 08.10 Morning | <i>Bradypus torquatus</i> | 08.17 Morning |
| <i>Ateles marginatus</i> | 08.10 Afternoon | <i>Sapajus robustus</i> | 08.17 Afternoon |
| <i>Callithrix flaviceps</i> | 08.12 Morning | <i>Alouatta guariba guariba</i> | 08.19 Morning |
| <i>Callithrix aurita</i> | 08.12 Afternoon | <i>Alouatta guariba clamitans</i> | 08.19 Afternoon |
| <i>Leontopithecus rosalia</i> | 08.13 Morning.1 | FINAL PLENARY With all participants. The results and recommendations for all species were presented and the next steps were defined. | 08.20 Morning |
| <i>Leontopithecus chrysomelas</i> | 08.13 Morning.2 | | |
| <i>Leontopithecus chrysopygus</i> | 08.13 Afternoon.1 | | |
| <i>Leontopithecus caissara</i> | 08.13 Afternoon.2 | | |

About the workshop

Participants

A total of 74 experts participated, representing more than 50 institutions. All participants were present in the pre-workshop session and the final plenary. For the species sessions, experts only participated in those with which they have *in situ* and/or *ex situ* experience.

Facilitation

The workshop had a facilitation team made up of three main facilitators and four co-facilitators: Kristin Leus (CPSG Europe), Kathy Traylor-Holzer (CPSG HQ), Fabiana Lopes Rocha (CPSG|CSS Brazil), Marina Somenzari (CEMAVE/ICMBio), Benjamin Phalan (Parque das Aves), Katherina Herrmann (CPSG Europe) and Ana Raquel Gomes Faria (AZAB).

The workshop process was prepared by CPSG and CSS Brazil:

Conservation Planning Specialist Group

CPSG is part of the International Union for Conservation of Nature Species Survival Commission (IUCN SSC). CPSG's mission is to save threatened species by increasing the effectiveness of conservation efforts worldwide. For 40 years, CPSG accomplished this by using scientifically sound, collaborative processes that bring together people with diverse perspectives and knowledge to catalyze positive conservation change. CPSG works to ensure that all species that require a plan are covered by an implemented and effective plan.

In this workshop, we adopted CPSG's [Principles and Steps](#): Plan to act, promote inclusive participation, use sound science, ensure good design and neutral facilitation, reach decisions through consensus, generate and share products quickly, and adapt to changing circumstances. We also used CPSG's *Ex Situ* Conservation Assessment process to evaluate if and which *ex situ* roles are recommended as part of the conservation strategy for each target species.

Center for Species Survival Brazil

CSS Brazil is the union of three co-founders: the Species Survival Commission (SSC) of the International Union for Conservation of Nature (IUCN), the Conservation Planning Specialist Group (CPSG) of the IUCN SSC and Parque das Aves. CSS Brazil combines the experience and resources of the three co-founders to enhance the capacity of the IUCN Species Survival Commission network to Assess, Plan, Act, and influence species conservation policies in Brazil.

Workshop Process

Ex situ Conservation Assessment

For each of the 16 taxa, information on their status in the wild and *ex situ*, threats, ecology, and ongoing conservation actions was collected in collaboration with relevant experts before the workshop. These data were compiled in presentations and were used as supporting material in the workshop discussions.

The workshop followed CPSG's *Ex situ* Conservation Assessment (ECA) process, which is based upon the 5-step decision process outlined in the [IUCN SSC Guidelines on the Use of Ex situ Management for Species Conservation](#) (IUCN 2014). This process provides guidance for identifying and evaluating possible ways in which individuals or *ex situ* activities can contribute to the global conservation of a species. **The term *ex situ* refers to individuals (or live biological samples) that are held in artificial, human-controlled settings, from highly artificial environments to semi-natural conditions, and whether they are held temporarily or long-term.** Such settings include zoos, aquariums, botanical gardens, wildlife rescue or rehabilitation centers, biobanks, and other facilities that hold animals or plants in *ex situ* conditions for any length of time.

Ex situ conservation has potential to help reduce or mitigate primary threats, to offset the effects of threats, to restore wild populations, and to prevent species extinction by buying time for threat abatement.

Such activities can complement other conservation activities focused on wild (*in situ*) populations and conditions so that species do not disappear before suitable conditions in the wild are restored. Integration of *in situ* and *ex situ* conservation plans is important to assure that, whenever appropriate, *ex situ* conservation is used to support *in situ* conservation in the best possible manner.

In some cases, *ex situ* management will be a critical component of a species conservation strategy; in others, it may have a secondary relevance, supporting other interventions; or it may have no conservation role to play. It is necessary, therefore, to consider how *ex situ* management can contribute towards the general goals of conservation established for the species, and to clearly document this. The consideration of all potential conservation options by all stakeholders and for all populations of a species in developing an integrated conservation strategy is known as the One Plan Approach (Byers *et al.* 2013).

The IUCN guidelines outline a five-step decision process to assess the value and appropriateness of *ex situ* management as a conservation tool, as follows:



1

Compile a review of the status and threats of the species.

To inform discussion of conservation actions, it is necessary to review and collate all relevant information on the species, both in the wild and *ex situ*. This information is used to assess the viability of the population and to identify and understand the threats that impact the species.

2

Define the role or roles that *ex situ* management could play in the overall conservation of the species.

The potential *ex situ* management strategies proposed should address one or more specific threats or constraints to the viability and conservation of the species, as identified in the status review and threat analysis, and target improving its conservation status.

3

Determine the characteristics and dimensions of the *ex situ* population or program required to fulfill the identified conservation role(s).

The identified conservation purpose and function of the *ex situ* program will help determine its required nature, scale and duration.

4

Define the resources and expertise needed for the *ex situ* management program to fulfill its role(s) and assess the feasibility and risks.

It is important to evaluate the required resources; the feasibility of successfully managing such a program; the likelihood of success in all steps, including, if relevant, any releases to the wild; and the risks, including risks to the species in the wild and to other conservation activities. These factors should be balanced against the risks of not adopting appropriate conservation measures.

5

Make a decision that is well informed (using the information gathered above) and transparent (showing how and why the decision was made).

The decision to include *ex situ* management in the species conservation strategy should be determined by weighing the potential benefit to the species, along with the likelihood of success, against the overall costs and risks. The potential benefits, costs, and risks of alternative conservation actions, and of inaction, should also be considered.

If the decision is made to implement an *ex situ* management program for conservation, then the following considerations are important in the development of this program:

- Formulate the actions required for the program to meet its conservation goals.
- Develop protocols for data collection and management for adequate monitoring.
- Develop the *ex situ* management program according to existing national and international conservation plans, agreements, and policies.
- Consult throughout the process with all stakeholder groups and organizations.
- Establish a timeline with clear and achievable deadlines for implementing the actions.

The IUCN guidelines suggest regular evaluation of the *ex situ* program so that its performance can be measured, and so that it can be adjusted and improved whenever necessary. This includes not only evaluation of the program's success but also its role within the overall conservation strategy for the species, which is likely to change over time. Regular reporting on *ex situ* activities is also important to generate awareness and support, meet any legal requirements, and contribute to knowledge on *ex situ* management for conservation.

We followed the process described above to assess the *ex situ* roles for each focal taxon. The potential *ex situ* roles considered in this workshop included all those identified in the IUCN guidelines. The roles are discussed in more detail in the next section for each species.

This English version is a summary of the workshop report. The full species' assessments and recommendations can be found in the Portuguese report [HERE](#).



Brown Howler Monkey | *Alouatta guariba*

VU

Report: Gerson Buss (ICMBio/CPB)

Participants: Alcides Pissinatti - CPRJ/INEA, Aline Naíssa Dada - CEPESBI/Indaial, Amely Martins - ICMBio/CPB, Caio Motta - FPZSP, Cauê Monticelli - CECFAU/FPZSP, Dilmar Oliveira - DeFau/SIMA-SP, Fabiano Melo - UFV, Gabriela Ludwig - ICMBio/CPB, Gerson Buss - ICMBio/CPB, Keoma Coutinho Rodrigues - ICMBio/CPB, Leandro Jerusalinsky - ICMBio/CPB, Leonardo Neves - autonomous researcher, Mara Marques - AZAB and FPZSP, Marcelo Rheingantz - UFRJ, Marcia M. de Assis Jardim - SEMA/RS, Moira Ansolch - Criadouro Arca de Noé (RS), Monica Montenegro - ICMBio/CPB, Silvia Moreira - CPRJ/INEA, Thaís Guimaraes Luiz - CTR8/SIMA-SP, Thomas Christensen - ICMBio/COESP, Vanessa B. Fortes - UFSM, and Zelinda M. B. Hirano - CEPESBI/Indaial





SPECIES

Alouatta guariba clamitans

Alouatta guariba guariba

EX SITU ROLES

Main role:

Source for population restoration

Support roles:

Conservation *ex situ* research

Conservation education

COMMENTS

- Population rescue was considered an important role for the species, but viability is currently very low.
- The role of a security population, although also considered important, especially for populations in the extreme north of the species distribution, remained to be better evaluated later, when the Population Management Program is developed.

RECOMMENDATIONS

1. Develop the Population Management Program for the species in the PAN PPMA;
2. Hold, in the short term, a workshop to outline the Population Management Program, considering the individuals who are already in *ex situ* (which individuals would be able to integrate the restoration population; which participating institutions, etc.);
3. Consider the different management units in both the maintenance and release of animals: the need to know the origin of the individuals and carry out genetic characterization;
4. Vaccinate for Yellow Fever all individuals who will be released;
5. Quickly develop an Emergency Management Plan to rescue populations that may be at imminent risk of extinction.



White-cheeked Spider Monkey |

EN

Ateles marginatus

Report: Renata Bocorny de Azevedo (ICMBio/CPB)

Participants: Alcides Pissinatti - CPRJ/INEA, Gerson Buss - ICMBio/CPB, Gustavo Canale - UFMT, Ítalo Mourthé - UFPA, Leandro Jerusalinsky - ICMBio/CPB, Mara Marques - AZAB and FPZSP, Mônica Montenegro - ICMBio/CPB, Renata Azevedo - ICMBio/CPB, Tays Izidoro - *Studbook keeper* AZAB, Christine Steiner- UFMT, and Elaine Dione Venega da Conceição - UFMT





EX SITU ROLES

Main role:

Establish an insurance population

Support roles:

Conservation education

Ex situ research and/or training

Advocacy

Financing (fundraising)

COMMENTS

- In the short term, define the separation of animals according to their origin: population from the North or South of the species distribution.
- Rescued and rehabilitated individuals/groups who can return to nature, may be released in their area of origin, according to a decision key to be developed.

RECOMMENDATIONS

1. Develop a decision key on the destination of rescued and/or rehabilitated animals, including the possibility of forming and releasing groups in the short term.
2. Promote greater integration between in situ and *ex situ* environmental awareness activities (e.g. consider animals affected by being run over to raise awareness among drivers).



Southern Muriqui |

Brachyteles arachnoides

EN

Report: Ana Raquel Gomes Faria (AZAB Conservation Director), Clarissa Machado de Carvalho (Advisor to the AZAB Conservation Board, Mara Cristina Marques (AZAB President)

Participants: Alcides Pissinatti – CPRJ/INEA, André Lanna – UFRJ, Cecília Pessutti – *Studbook keeper* AZAB, Dilmar de Oliveira - SIMA SP, Leandro Jerusalinsky ICMBio/CPB, Mara Marques - AZAB and FPZSP, Maurício Talebi - UNIFESP and Pro Muriqui, Mônica Montenegro - ICMBio/CPB, Nancy Banevicius – Zoológico de Curitiba, and Robson Hack - LACTEC



EX SITU ROLES

Main role:

Establish an insurance population

Support roles:

Conservation education

Ex situ research and/or training

COMMENTS

- Need for input from *in situ* individuals (founders) in the short term.
- Eventually, the insurance population will be able to play the role of population restoration (medium and long term).

RECOMMENDATIONS

1. Form a multidisciplinary team to develop planning to reduce the challenges of *ex situ* maintenance, considering success and failure cases (e.g. reducing disease risks).
2. Invest in health research in *ex situ* population.
3. Have *in situ* and *ex situ* management protocols always updated and used by everyone.



Northern Muriqui |

CR

Brachyteles hypoxanthus

Report: Paloma M. Santos (ICMBio/CPB Fellowship)

Participants: Alcides Pissinatti – CPRJ/INEA, Carla Possamai – Projeto Muriqui de Caratinga and MIB, Fabiano Melo – UFV, Fernanda Tabacow - Projeto Muriqui de Caratinga and MIB, Karen Strier - Projeto Muriqui de Caratinga and Universidade de Wisconsin, Leandro Jerusalinsky - ICMBio/CPB, Leandro Santana – MIB, Mara Marques - AZAB and FPZSP, Mariane Kaizer - ECO-DIVERSA, Mônica Montenegro - ICMBio/CPB, Nancy Banevicius – Zoológico de Curitiba, Sérgio Mendes – INMA, and Sílvia Moreira - CPRJ/INEA





EX SITU ROLES

Main role:

Population restoration

Support roles:

Conservation education

Ex situ research

COMMENTS

- Individuals at risk that need to be rescued will not necessarily undergo *ex situ* management; depending on the situation (decision key), they will be translocated directly to the *in situ*.

RECOMMENDATIONS

1. Indicate the creation of the Population Management Program for the species in the PAN PPMA;
2. The management being tested in Ibitipoca (Muriqui House) was considered a good model to be replicated, indicating the need for at least two or three more areas/institutions: rescue of individuals at risk, artificial formation of a group (preferably in facilities with characteristics close to the natural environment - enclosure of a small portion of forest in the area of occurrence), expansion of the group, release into nature in the short term).



Maned Three-toed Sloth |

VU

Bradypus torquatus

Report: Paloma M Santos (ICMBio/CPB Fellowship)

Participants: Adriano Chiarello – USP, Camila Cassano – UESC, Flávio Soffiati -AMLD, Gastón Giné – UESC, Leandro Jerusalinsky- ICMBio/CPB, Mara Marques - AZAB and FPZSP, Mônica Montenegro – ICMBio/CPB, Nadia Moraes-Barros - Universidade do Porto-Portugal, Paloma Marques – ICMBio/CPB, Rebecca Cliffe - Sloth Conservation Foundation-Costa Rica, Suelen Ferreira – AMLD, and Monique Pool - Green Heritage Fund-Suriname



EX SITU ROLES

Main role:

There was no recommendation for establishing an *ex situ* population for management.

Support roles:

Ex situ research and/or training

COMMENTS

- We do not have enough information to conclude about the need for population management to conserve the species. Furthermore, as the species is refractory to long-term *ex situ* maintenance, only rehabilitation and release into the wild of individuals that arrive *ex situ* were indicated.

RECOMMENDATIONS

1. Outline specific management actions/activities: planning (creating a database to record animals), collecting material and carrying out genetic analyses, elaboration and application of management protocols, definition/creation of specialized rehabilitation centers throughout the distribution of the species.
2. Consider the four evolutionary units when defining release areas; importance of identifying the origin of individuals.



Black-handed Titi | *Callicebus melanochir*

VU

Report: Keoma Coutinho Rodrigues (ICMBio/CPB Fellowship)

Participants: Alcides Pissinatti – CPRJ/INEA, Leandro Jerusalinsky – ICMBio/CPB, Mara Marques – AZAB and FPZSP, Monica Montenegro – ICMBio/CPB, Silvia Moreira – CPRJ/INEA, Valéria Pereira - Zoológico de Belo Horizonte, and Waldney Martins – UNIMONTES.



EX SITU ROLES

Main role:

There was no recommendation for establishing an *ex situ* population for management.

Support roles:

Ex situ research and/or training

COMMENTS

- We do not have enough information to conclude about the need for population management to conserve the species.

RECOMMENDATIONS

1. Outline specific management actions/activities: planning (creating a database to identify individuals and institutions and register animals), collecting material and carrying out genetic analyses, elaboration and application of management protocols.
2. Establish greater proximity to screening centers to verify the arrival of the species, confirm taxonomic identification, and guide the correct destination.
3. Make a new *ex situ* assessment when more information about the species, mainly *in situ*, is obtained.



Atlantic Titi | *Callicebus personatus*

VU

Report: Keoma Coutinho Rodrigues (ICMBio/CPB Fellowship)

Participants: Alcides Pissinatti – CPRJ/INEA, Leandro Jerusalinsky – ICMBio/CPB, Mara Marques – AZAB and FPZSP, Monica Montenegro – ICMBio/CPB, Sílvia Moreira – CPRJ/INEA, Valéria Pereira - Zoológico de Belo Horizonte, and Waldney Martins – UNIMONTES.



EX SITU ROLES

Main role:

There was no recommendation for establishing an *ex situ* population for management.

Support roles:

Ex situ research and/or training

COMMENTS

- We do not have enough information to conclude about the need for population management to conserve the species.

RECOMMENDATIONS

1. Outline specific management actions/activities: planning (creating a database to identify individuals and institutions and register animals), collecting material and carrying out genetic analyses, elaboration and application of management protocols.
2. Establish greater proximity to screening centers to verify the arrival of the species, confirm taxonomic identification, and guide the correct destination.
3. Make a new *ex situ* assessment when more information about the species, mainly *in situ*, is obtained.



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Buffy-tufted-ear Marmoset |

EN

Callithrix aurita

Report: Ana Raquel Gomes Faria (AZAB Conservation Director), Clarissa Machado de Carvalho (Advisor to the AZAB Conservation Board, Mara Cristina Marques (AZAB President)

Participants: Alcides Pissinatti – CPRJ/INEA, Caio Motta – FPZSP, Cauê Monticelli – CECFAU/FPZSP, Cecília Kierulff – Pri-Matas, Cláudia Igayara – *Studbook keeper* AZAB and Zoológico de Guarulhos, Dilmar Oliveira - DeFau/SIMA-SP, Dominic Wormell – EAZA and Durrel, Fabiano Melo – UFV, Leandro Jerusalinsky – ICMBio/CPB, Mara Marques – AZAB and FPZSP, Márcio Port-Carvalho – IF-SP, Monica Montenegro – ICMBio/CPB, Orlando Vital – PCSS, Rodrigo Carvalho – PREA, and Silvia Moreira – CPRJ/INEA



EX SITU ROLES

Main role:

Insurance population as a source for population restoration
Rescue (temporary or long-term)

Support roles:

Conservation education
Ex situ research and/or training
Advocacy
Financing (fundraising)

COMMENTS

- Provide long-term use of the insurance population for the population restoration process.
- Check the need for demographic manipulation (sex ratio) in the long term.

RECOMMENDATIONS

1. Need to have genetic identification of individuals to avoid the use of hybrids in *ex situ* management (cases of animals with the species' phenotype) and in releases for population restoration;
2. Test Yellow Fever vaccine.



Buffy-headed Marmoset |

EN

Callithrix flaviceps

Report: Ana Raquel Gomes Faria (AZAB Conservation Director), Clarissa Machado de Carvalho (Advisor to the AZAB Conservation Board, Mara Cristina Marques (AZAB President)

Participants: Alcides Pissinatti – CPRJ/INEA, Andressa Guimarães – INMA, Carla Possamai – MIB, Cauê Monticelli – CECFAU/FPZSP, Cecília Kierulff – Pri-Matas, Cláudia Igayara – Zoológico de Guarulhos, Dominic Wormell – EAZA and Durrel, Fabiano Melo – UFV, Leandro Jerusalinsky – ICMBio/CPB, Mara Marques – AZAB and FPZSP, Mariane Kaizer – ECO-DIVERSA, Monica Montenegro – ICMBio/CPB, Rodrigo Carvalho – PREA, and Silvia Moreira – CPRJ/INEA



EX SITU ROLES

Main role:

The program must be established in two phases:

1) rescue of populations at risk (source population); 2) establishment of an insurance population for future restoration actions.

Support roles:

Conservation education

Ex situ research and/or training

Advocacy

Financing (fundraising)

COMMENTS

- The founders of the program will be those who are at risk, following the PAN's decision-making key.

RECOMMENDATIONS

1. Indicate the creation of the Population Management Program for the species in the PAN PPMA;
2. Start the Studbook for the species since the first founders entered.
3. Use management experience with *C. aurita*;
4. Need to have genetic identification of individuals to avoid the use of hybrids in *ex situ* management (cases of animals with the species' phenotype) and in releases for population restoration;
5. Need to have a plan for removing individuals from nature (number of animals/year X number of institutions needed) to create an insurance population.



Black-faced Lion Tamarin |

EN

Leontopithecus caissara

Relatoria: Gabriela Ludwig (ICMBio/CPB Fellowship)

Participantes: Alcides Pissinatti - CPRJ/INEA, Andreia Martins - AMLD, Carlos Ruiz Miranda - UENF and AMLD, Cauê Monticelli - CECFAU/FPZSP, Caio Motta - FPZSP, Cláudia Igayara - AZAB and Zoológico de Guarulhos, Dilmar de Oliveira - DeFau/SIMA-SP, Dominic Wormell - Durrel Wildlife Conservation Trust, Elenise Sipinski - SPVS, Gabriela Ludwig - ICMBio/CPB, Gabriela Rezende - IPE, James Dietz - SGLT and AMLD, Jennifer Mickelberg - Zoo Atlanta, Kristin Leus - CPSG Europe, Copenhagen Zoo and EAZA, Laurence Culot - UNESP, Leandro Jerusalinsky - ICMBio/CPB, Leonardo Oliveira - FFP/UERJ, Lou Ann Dietz - SGLT and AMLD, Mara Marques - AZAB and FPZSP, Mônica Montenegro ICMBio/CPB, Roberta Boss - SPVS, Sílvia Moreira - CPRJ/INEA, Suelen Ferreira - AMLD, Thaís Guimarães Luiz - SIMA-S, Alexandre Amaral Nascimento - UEMG and Rogério Zacariotti - IDF Brasil



EX SITU ROLES

Main role:

Establish an insurance population

Support roles:

Conservation education

Ex situ research and/or training

Advocacy

Financing (fundraising)

COMMENTS

- A team was created (ICMBio/CPB, AZAB, SPVS) to coordinate detailed planning before the founder's capture begins. Meanwhile, the studies being carried out *in situ* will provide more population information and the institutions identified for *ex situ* management will prepare to receive the individuals.

RECOMMENDATIONS

1. Prepare detailed planning considering all necessary information and activities before, during and after the capture of the first founders, minimizing risks to the free-living population and aiming for a good start in establishing the insurance population.
2. Quickly develop an Emergency Management Plan to rescue individuals/groups/populations that may be at imminent risk of extinction, mainly due to the likelihood of catastrophes (yellow fever, weather events) in the area.



Golden-headed Lion Tamarin |

Leontopithecus chrysomelas

EN

Report: Gabriela Ludwig (ICMBio/CPB Fellowship)

Participants: Alcides Pissinatti - CPRJ/INEA, Andreia Martins - AMLD, Carlos Ruiz Miranda - AMLD, Cauê Monticelli - CECFAU/FPZSP, Caio Motta - FPZSP, Cláudia Igayara - AZAB and Zoológico de Guarulhos, Dilmar de Oliveira - DeFau/SIMA-SP, Dominic Wormell - EAZA and Durrel, Elenise Sipinski - SPVS, Gabriela Ludwig - ICMBio/CPB, Gabriela Rezende - IPE, James Dietz - AMLD, Jennifer Mickelberg - Zoo Atlanta, Keoma Coutinho Rodrigues - ICMBio/CPB, Kristin Leus - Antwerp Zoo and EAZA, Laurence Culot - UNESP, Leandro Jerusalinsky ICMBio/CPB, Leonardo Oliveira - FFP/UERJ, Lou Ann Dietz - AMLD, Mara Marques - *Studbook keeper* regional AZAB and FPZSP, Mônica Montenegro ICMBio/CPB, Boss - SPVS, Sílvia Moreira - CPRJ/INEA, Suelen Ferreira - AMLD, Thaís Guimarães Luiz - SIMA-S, Alexandre Amaral Nascimento - UEMG, and Rogério Zacariotti - IDF Brasil



EX SITU ROLES

Main role:

Keep the insurance population

Support roles:

Conservation education

Ex situ research and/or training

Advocacy

Financing (fundraising)

COMMENTS

- According to the diagnosis of the population situation in the western distribution of the species, it may be that the insurance population needs to be used for population recovery.

RECOMMENDATIONS

1. Continue managing the world population in an integrated manner;
2. Establish a strategy so that individuals rescued from the population of Niterói do not occupy space in institutions, to the detriment of individuals in the Program;
3. Monitor some fragments that have groups in the western part of the species' distribution, to assess the need for population restoration.



Black Lion Tamarin |

Leontopithecus chrysopygus

EN

Report: Gabriela Ludwig (ICMBio/CPB Fellowship)

Participants: Alcides Pissinatti - CPRJ/INEA, Andreia Martins - AMLD, Carlos Ruiz Miranda - AMLD, Cauê Monticelli - CECFAU/FPZSP, Caio Motta - FPZSP, Cláudia Igayara - AZAB and Zoológico de Guarulhos, Dilmar de Oliveira - DeFau/SIMA-SP, Dominic Wormell - EAZA and Durrel, Elenise Sipinski - SPVS, Gabriela Ludwig - ICMBio/CPB, Gabriela Rezende - IPE, James Dietz - AMLD, Jennifer Mickelberg - Zoo Atlanta, Keoma Coutinho Rodrigues - ICMBio/CPB, Kristin Leus - CPSG Europe, Copenhagen Zoo and EAZA, Laurence Culot - UNESP, Leandro Jerusalinsky ICMBio/CPB, Leonardo Oliveira - FFP/UERJ, Lou Ann Dietz - AMLD, Mara Marques - *Studbook keeper* regional AZAB and FPZSP, Mônica Montenegro ICMBio/CPB, Roberta Boss - SPVS, Sílvia Moreira - CPRJ/INEA, Suelen Ferreira - AMLD, Thaís Guimarães Luiz - SIMA-SP, B, Alexandre Amaral Nascimento - UEMG, and Rogério Zacariotti - IDF Brasil



EX SITU ROLES

Main role:

Establish an insurance population

Support roles:

Conservation education

Ex situ research and/or training

Advocacy

Financing (fundraising)

COMMENTS

- The current *ex situ* population is still small, far from becoming viable, and needs new founders.
- Despite the need for restoration of some *in situ* populations, this can be done in the short term through translocations of individuals between areas.

RECOMMENDATIONS

1. As animals do not arrive at rehabilitation centers, it is necessary to capture the founders *in situ*, who may be individuals or groups at risk;
2. Use information on the genetic structure of the *ex situ* population to guide the decision of where to obtain new founders;
3. Continue managing the world population in an integrated manner.



Golden Lion Tamarin |

Leontopithecus rosalia

EN

Report: Gabriela Ludwig (ICMBio/CPB Fellowship)

Participants: Alcides Pissinatti - CPRJ/INEA, Andreia Martins - AMLD, Carlos Ruiz Miranda - AMLD, Cauê Monticelli - CECFAU/FPZSP, Caio Motta - FPZSP, Cláudia Igayara - AZAB and Zoológico de Guarulhos, Dilmar de Oliveira - DeFau/SIMA-SP, Dominic Wormell - EAZA and Durrel, Elenise Sipinski - SPVS, Gabriela Ludwig - ICMBio/CPB, Gabriela Rezende - IPE, James Dietz - AMLD, Jennifer Mickelberg *Studbook keeper* internacional Zoo Atlanta, Keoma Coutinho Rodrigues - ICMBio/CPB, Kristin Leus - CPSG Europe, Copenhagen Zoo and EAZA, Laurence Culot - UNESP, Leandro Jerusalinsky ICMBio/CPB, Leonardo Oliveira - FFP/UERJ, Lou Ann Dietz - AMLD, Mara Marques - *Studbook keeper* regional AZAB and FPZSP, Mônica Montenegro ICMBio/CPB, Roberta Boss - SPVS, Sílvia Moreira - CPRJ/INEA, Suelen Ferreira - AMLD, Thaís Guimarães Luiz - SIMA-SP, Alexandre Amaral Nascimento - UEMG and Rogério Zacariotti - IDF Brasil



EX SITU ROLES

Main role:

Keep the insurance population

Support roles:

Conservation education

Ex situ research and/or training

Advocacy

Financing (fundraising)

COMMENTS

- Verify the need for future population reinforcement *in situ* with the *ex situ* population considering the demographic reduction of the population due to Yellow Fever.

RECOMMENDATIONS

1. Continue managing the world population in an integrated manner.



Pied Tamarin | *Saguinus bicolor*

CR

Relatoria: Renata Bocorny de Azevedo (ICMBio/CPB)

Participantes: Alcides Pissinatti - CPRJ/INEA, Andy Baker – *Studbook keeper* internacional - Philadelphia Zoo, Cláudia Igayara - Zoológico de Guarulhos, Cláudia Ladeira - *Studbook keeper* regional and Zoológico de Bauru, Diogo Lagroteria - ICMBio/CEPAM, Dominic Wormell - EAZA and Durrel, Leandro Jerusalinsky - ICMBio/CPB, Mara Marques – AZAB and FPZSP, Marcelo Gordo – UFAM, Moira Ansolch - Criadouro Arca de Noé, Mônica Montenegro - ICMBio/CPB, Renata Azevedo - ICMBio/CPB, and Sílvia Moreira - CPRJ/INEA



EX SITU ROLES

Main role:

Establish an insurance population

Support roles:

Conservation education

Ex situ research and/or training

Advocacy

Financing (fundraising)

COMMENTS

- Eventually, the insurance population will be able to play the role of population restoration.

RECOMMENDATIONS

1. Carry out genetic mapping (population origin) of the founders.
2. Integrate the national studbook with AZA and EAZA studbooks, and manage the world population in an integrated way.
3. Highlight the importance of the *ex situ* population in environmental education and awareness actions.



Crested Capuchin |

Sapajus robustus

EN

Report: Keoma Coutinho Rodrigues (CNPq - ICMBio/CPB Fellowship)

Participants: Alcides Pissinatti – CPRJ/INEA, Amely Martins - ICMBio/CPB, Keoma Coutinho Rodrigues - ICMBio/CPB, Leandro Jerusalinsky – ICMBio/CPB, Mara Marques – AZAB and FPZSP, Moira Ansolch - Criadouro Arca de Noé, Monica Montenegro – ICMBio/CPB, Silvia Moreira – CPRJ/INEA, and Waldney Martins - UNIMONTES



EX SITU ROLES

Main role:

There was no recommendation for establishing an *ex situ* population for management.

Support roles:

Ex situ research and/or training

COMMENTS

- We do not have enough information to conclude about the need for population management to conserve the species.

RECOMMENDATIONS

1. Outline specific management actions/activities: planning (creating a database to identify individuals and institutions and register animals), collecting material and carrying out genetic analyses, elaboration and application of management protocols.
2. Establish contact with the AZA studbook keeper to find out the status of the population.

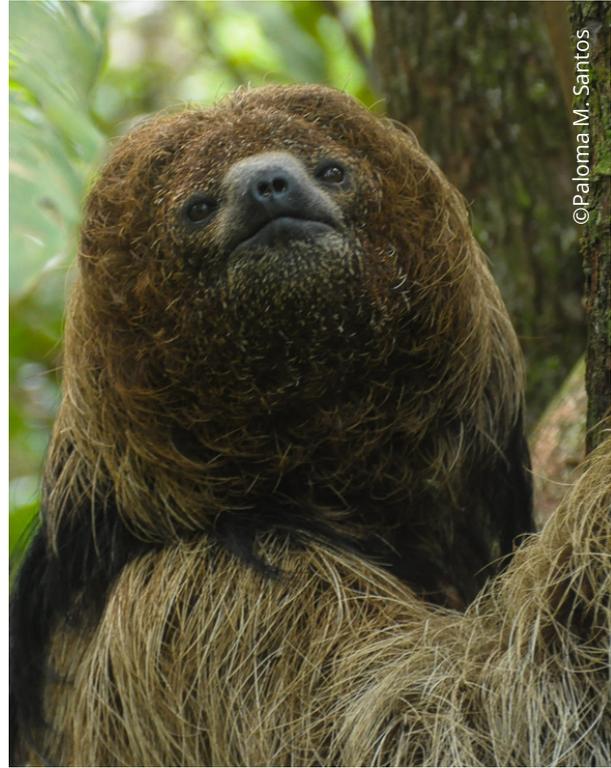


Progress since the
workshop



Alouatta guariba

1. The studbook for the species is being assembled.
2. The *Alouatta guariba* Integrated Population Management Program was developed (considering all the workshop recommendations), it is recognized by ICMBio and published and is available [HERE](#).
3. The “Ex situ Management Protocols for Primates of the Genus *Alouatta*” were prepared and published, also available [HERE](#).



Bradypus torquatus

1. From September 2022 onwards, two distinct species began to be recognized: *B. torquatus* (in Bahia and Sergipe) and *B. crinitus* (in Rio de Janeiro and Espírito Santo). However, population management recommendations remain the same.
2. Ex situ management protocols were developed, with the collaboration of all Workshop participants. They are in the final review phase for publication on the PAN website Atlantic Forest Primates and Sloths [HERE](#).



Leontopithecus caissara

1. *In situ* studies to collect population information continue, but there is still not enough knowledge to plan the removal of animals from the wild and the start of the *ex situ* insurance population.



Leontopithecus chrysomelas

1. In compliance with recommendations on defining strategies concerning the lack of space in management institutions to receive individuals from Niterói, the remaining groups are being captured, sterilized, returned to the area, and monitored.

2. *Ex situ* world population continues to be managed in an integrated manner



Leontopithecus chrysopygus

1. The Integrated Population Management Program has been developed and is currently under analysis for publication.
2. The *ex situ* world population continues to be managed in an integrated manner.



Leontopithecus rosalia

1. The *ex situ* world population continues to be managed in an integrated manner.



Appendices

- A. List of participants and photos
- B. Agenda
- C. Potential *ex situ* role descriptions

A. Participants



Name - Institution

Adriano Chiarello - USP

Alcides Pissinatti - CPRJ/INEA

Alexandre Amaral Nascimento - UEMG

Aline Naíssa Dada - CEPISBI/Indaial

Amely Martins - ICMBio/CPB

André Lanna - UFRJ

Andreia Martins - AMLD

Andressa Guimarães - INMA

Andy Baker - Philadelphia Zoo

Caio Motta - FPZSP

Camila Cassano - UESC

Carla Possamai - Projeto Muriqui de Caratinga and MIB

Carlos Ruiz Miranda - AMLD

Cauê Monticelli - CECFAU/FPZSP

Cecília Kierulff - Pri-Matas

Cecília Pessutti - AZAB

Name - Institution

Christine Steiner- UFMT

Cláudia Igayara - AZAB and Zoológico de Guarulhos

Cláudia Ladeira - Zoológico de Bauru

Dilmar Oliveira - DeFau/SIMA-SP

Diogo Lagroteria - ICMBio/CEPAM

Dominic Wormell - EAZA and Durrel

Elaine Dione Venega da Conceição - UFMT

Elenise Sipinski - SPVS

Fabiano Melo - UFV

Fernanda Tabacow - Projeto Muriqui de Caratinga and MIB

Flávio Soffiati - AMLD

Gabriela Ludwig - ICMBio/CPB

Gabriela Rezende - IPE

Gastón Giné - UESC

Gerson Buss - ICMBio/CPB

Gustavo Canale - UFMT

A. Participants



Name - Institution

Ítalo Mourthé - UFPA

James Dietz - AMLD

Jennifer Mickelberg - Zoo Atlanta

Karen Strier - Projeto Muriqui de Caratinga
and Universidade de Wisconsin

Katharina Herrmann - Berlin Zoo

Kathy Traylor-Holzer - CPSG HQ

Keoma Coutinho Rodrigues - ICMBio/CPB

Kristin Leus - CPSG Europe, Copenhagen
Zoo & EAZA

Laurence Culot - UNESP

Leandro Jerusalinsky - ICMBio/CPB

Leandro Santana - MIB

Leonardo Neves - autonomous researcher

Leonardo Oliveira - Teacher training
faculty at the State University of Rio de
Janeiro (FFP/UERJ)

Lou Ann Dietz - AMLD

Name - Institution

Mara Marques - AZAB and FPZSP

Marcelo Gordo - UFAM

Marcelo Rheingantz - UFRJ

Marcia M. de Assis Jardim - SEMA/RS

Márcio Port-Carvalho - IF-SP

Mariane Kaizer - ECO-DIVERSA

Maurício Talebi - UNIFESP and Pro Muriqui

Moira Ansolch - Criadouro Arca de Noé
(RS)

Monica Montenegro - ICMBio/CPB

Monique Pool - Green Heritage Fund-
Suriname

Nadia Moraes-Barros - Universidade do
Porto-Portugal

Nancy Banevicius - Zoológico de Curitiba

Orlando Vital - PCSS

Paloma Marques - ICMBio/CPB

Rebecca Cliffe - Sloth Conservation
Foundation-Costa Rica

A. Participants



Name - Institution

Renata Azevedo - ICMBio/CPB

Roberta Boss - SPVS

Robson Hack - LACTEC

Rodrigo Carvalho - PREA

Rogério Zacariotti - IDF Brasil

Sérgio Mendes - INMA

Sílvia Moreira - CPRJ/INEA

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Tays Izidoro - AZAB

Thaís Guimarães Luiz - SIMA-SP

Thomas Christensen - ICMBio/COESP

Valéria Pereira - Zoológico de Belo Horizonte

Vanessa B. Fortes - UFSM

Waldney Martins - UNIMONTES

Zelinda M. B. Hirano - CEPESBI/Indaial

A. Participants

Avaliação de manejo ex situ para
15 Primatas & a
Fregueta-de-coleira

Guariba
Alouatta guariba clamitans e *A. g. guariba*



Avaliação de manejo ex situ para
15 Primatas & a
Fregueta-de-coleira

Macaco-granha
Ateles marginatus



Avaliação de manejo ex situ para
15 Primatas & a
Fregueta-de-coleira

Muriqui-do-sul
Brachyteles arachnoides



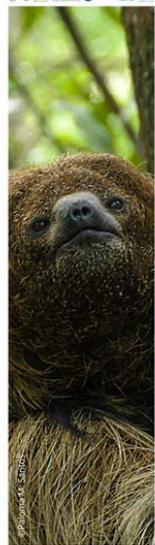
Avaliação de manejo ex situ para
15 Primatas & a
Fregueta-de-coleira

Muriqui-do-norte
Brachyteles hypoxanthus



Avaliação de manejo ex situ para
15 Primatas & a
Fregueta-de-coleira

Preguiça-de-coleira
Bradypus torquatus



Avaliação de manejo ex situ para
15 Primatas & a
Fregueta-de-coleira

Guigó
Callicebus melanochir



A. Participants

Avaliação de manejo ex situ para

15 Primatas & a frequência-de-coleira

16/08/21



Guigó-mascarado
Callicebus personatus



Avaliação de manejo ex situ para

15 Primatas & a frequência-de-coleira

12/08/21



Sagui-da-serra-escuro
Callithrix aurita



Avaliação de manejo ex situ para

15 Primatas & a frequência-de-coleira

12/08/21



Sagui-da-serra
Callithrix flaviceps



Avaliação de manejo ex situ para

15 Primatas & a frequência-de-coleira

13/08/21



Mico-leão
Leontopithecus rosalia, L. chrysomelas, L. chrysopygus e L. caissara



Avaliação de manejo ex situ para

15 Primatas & a frequência-de-coleira

10/08/21



Saguim-de-coleira
Saguinus bicolor



Avaliação de manejo ex situ para

15 Primatas & a frequência-de-coleira

17/08/21



Macaco-prego-de-crista
Sapajus robustus



Ex situ Conservation Assessment for



Preliminary session | July 27, 2021

AGENDA

| Hour | Activity | Speaker |
|-------|---|--|
| 14:00 | Platform instructions | Eugenia Cordero, IUCN SSC CPSG CSS Brazil |
| 14:05 | Welcome and institutional opening | Leandro Jerusalinsky, ICMBio/CPB Fabiana Rocha, CSS Brazil CPSG |
| | PAN and workshop objectives | Mônica Montenegro, ICMBio/CPB |
| 14:50 | Who is here and what do we have in common? | Eugenia Cordero, IUCN SSC CPSG CSS Brazil |
| 15:05 | Introduction to CPSG. One Plan Approach and <i>ex situ</i> guidelines | Kristin Leus, IUCN SSC CPSG Europe |
| 15:45 | P A U S E | |
| 16:00 | Overview of species without an <i>ex situ</i> program | Mônica Montenegro, ICMBio/CPB |
| 16:50 | Overview of species with an <i>ex situ</i> program | Mara Marques, Fundação Parque Zoológico de São Paulo |
| 17:40 | Next Steps | Katharina Herrmann, CPSG Europe |
| 18:00 | C L O S I N G | |

Organizers:





Brachyteles hypoxanthus

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Brachyteles arachnoides

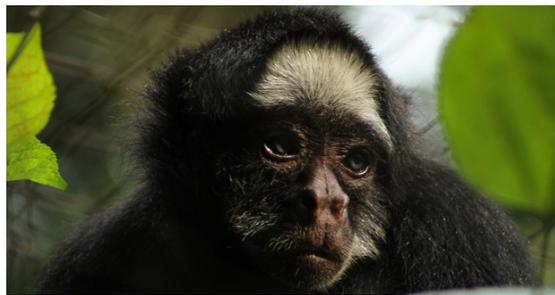
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09.08



Saguinus bicolor

©Diogo Cesar Lagroteria Oliveira Faria



Ateles marginatus

©Francielly da Silva Reis

10.08



Callithrix flaviceps

©Marilyn Mardegan Assunção



Callithrix aurita

©Wagner Rafael Lacerda

12.08



Leontopithecus rosalia

©Marilyn Mardegan Assunção



Leontopithecus chrysomelas

©Igor Inforzato

13.08



Leontopithecus chrysopygus

©Hiago Ermenegildo



Leontopithecus caissara

©Celso Margraf

13.08



Callicebus melanochir

©Adriano Gambarini



Callicebus personatus

©Cintia Corsini Fernandes

16.08



Bradypus torquatus

©Paloma M. Santos



Sapajus robustus

©Luis Francisco Oliveira Pereira Gonzaga

17.08



Alouatta guariba clamitans

©Mariano Cordeiro Pairet



Alouatta guariba guariba

©Cristine Prates

19.08

*All photos belong to the ICMBio/CPB Image Bank

C. Descriptions of potential *ex situ* roles

The roles listed below are based on a combination of the role descriptions in the IUCN SSC Guidelines on the Use of *Ex Situ* Management for Species Conservation (IUCN/SSC 2014), the IUCN SSC Guidelines for Reintroductions and Other Conservation Translocations (IUCN/SSC 2013), and those in Appendix I of the Amphibian Ark Conservation Needs Assessment (Zippel *et al.* 2006).

Ark

Maintain a long-term *ex situ* population after extinction of all known wild populations and as a preparation for reintroduction or assisted colonization, if and when feasible.

Insurance population

Maintain a long-term, viable *ex situ* population to prevent predicted local, regional or global species extinction and preserve options for future conservation strategies. These are typically species that are threatened and/or declining and for which it is unsure whether *in situ* threat mitigation will have the sufficient effect in a sufficient timeframe to prevent species extinction or dramatic decline in individuals, populations, and/or genetic diversity. An insurance population also may be used as a source population for genetic and/or demographic supplementation or other conservation translocations as required, but these are not yet actively planned in the foreseeable future.

Rescue (temporary or long-term)

Establish an *ex situ* population for a species that is in imminent danger of extinction (locally or globally) and requires *ex situ* management, as part of an integrated program, to ensure its survival. The species may be in imminent danger because the threats cannot/will not be reversed in time to prevent likely species extinction, or the threats have no current remedy. The rescue may need to be long-term (e.g., emerging disease, invasive species) or temporary (e.g., predicted imminent threats that are limited in time, such as extreme weather, or oil spill). This role relates to the rescue of a population and not the rescue of injured or confiscated individuals.

Demographic manipulation

Improve a demographic rate (survival or reproduction) or status (e.g., skewed sex ratio) in the wild population, often related to a particular age, sex, or life stage. Examples include head-start programs that remove eggs or young from the wild to reduce high juvenile mortality and then subsequently return individuals to the wild.

Population restoration: Reintroduction

Serve as a source of individuals for population restoration to re-establish the species to part of its former range from which it has been extirpated.

Population restoration: Reinforcement

Serve as a source of individuals for population restoration to supplement an existing population, for demographic, behavioral, genetic, or other purposes.

C. Descriptions of potential *ex situ* roles

Conservation introduction: Ecological replacement

Introduce the species outside of its indigenous range to re-establish a lost ecological function and/or modify habitats. This may involve species that are not themselves threatened but that contribute to the conservation of other taxa through their ecological role.

Conservation introduction: Assisted colonization

Introduce the species outside of its indigenous range to avoid extinction, for example, if the species' original habitat is no longer suitable for the species.

***Ex situ* research and/or training**

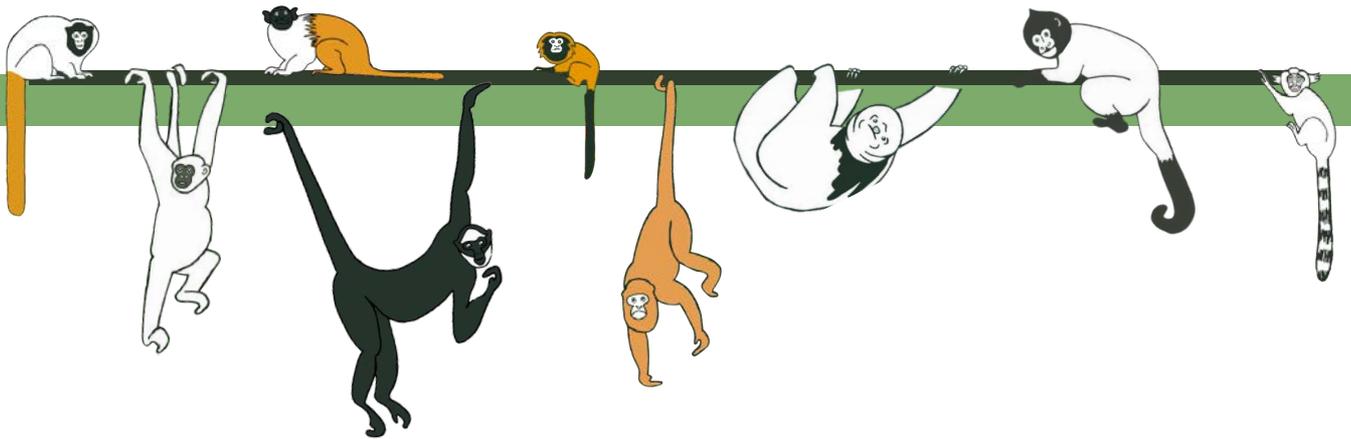
Use an *ex situ* population for research and/or training that will directly benefit conservation of the species, or a similar species, in the wild (e.g., develop monitoring methods; address data gaps in life history information, nutritional requirements, or disease transmission/treatment). The research or training addresses specific questions essential for success of the overall conservation strategy for the species. This can include cases in which a non-threatened species serves as a model for threatened species, or establishing *ex situ* populations of a threatened species to gain important species-specific husbandry and breeding expertise that is likely to be needed in the future to conserve the species.

Conservation education

Ex situ population forms the basis for an education and awareness program that addresses specific threats or constraints to the conservation of the species or its habitat. Education should address specific human behavioral changes that are essential for the success and are an integral part, of the overall conservation strategy for the species. This primarily involves *ex situ* locations visited by the intended human audience and requires or is greatly benefitted by *ex situ* individuals or management.

***Ex situ* Conservation Assessment for**

15 Primates & the maned sloth



Organizers:

