Tamarin Tales

Volume 14, 2017

Newsletter of the Lion Tamarins of Brazil Fund

The Black Lion Tamarins' walk

- an educational event for the conservation of the species

Laurence Culot

The Laboratory of Primatology (LaP) of the Sao Paulo State University (UNESP, Rio Claro, Brazil) began, in 2015, a large project on the ecology and behavior of the Black Lion Tamarins, Leontopithecus chrysopygus, financed by FAPESP (Fundação de Amparo à Pesquisa do Estado de São Paulo) in the Lower and Upper Paranapanema regions. One of our field site, Guareí, holds a newly recorded population of Black Lion Tamarins (Culot et al, in review) in the gallery forests of the Guareí River and its tributaries. Two of the recorded groups have frequent contact with the human population, frequently crossing a municipal road (where road kills already occurred) and a walking track (where the locals often report the presence of the species).

In parallel to our research project, we decided to carry out an educational program, financed by the PROEX (Pró-Reitoria de Extensão Universitária of UNESP), with the

Figure 1.
Beginning of the Black Lion Tamarins' walk. (A) Gathering of the first group of children, (B) On the Black Lion-Tamarins' walk with Giuliana Garcia, one of the monitor, (C)-(D)-(E) Learning about the Black Lion Tamarins with the different posters located all along the walk.

aim of: 1) informing the population of Guareí about the presence of a threatened species in their municipality, 2) developing the locals' will to protect the species and helping them to implement concrete actions in this sense (together with the Secretaria do Meio Ambiente of Guareí), and 3) encouraging the local population to inform us about the presence of Black Lion Tamarin groups in their properties in order to initiate the census of this population.

In March, we conducted a brief survey to determine the level of knowledge of the local population about the Black Lion Tamarin and their behavior/reaction when observing the species. We concluded that the general knowledge was low and some negative behaviors were reported such as the will to capture the individuals, touch them, or give them food. These results confirm the necessity of an educational program in the region. In addition of the distribution of flyers informing about the species and some small programs on the local radio in 2015, we organized, on the 19th of November 2015, the "Black lion-tamarins' walk" (A Caminhada dos Micos), together with the Secretaria do Meio Ambiente of the Municipality of Guareí which involved 165 10-to-11-year-old children and their teachers.

The aim of the event was to transmit important information about the distribution, behavior, ecology and conservation of the Black Lion Tamarins and how to protect them through different activities and an educational walk in the area where two Black Lion Tamarin groups are frequently seen crossing the road. Along the educational walk, we placed four posters about: 1) how to recognize the Black Lion Tamarin? 2) Where does the Black Lion Tamarin live? 3) What do the Black Lion Tamarin eat? 4) How to protect the Black Lion Tamarin? (Figure 1). Then, the children were invited to take part in different games aiming to explain why the

Figure 2: After the walk, some of the activities we organized (A) Learning about what a Black Lion Tamarin can and cannot eat; (B) Learning about primate distribution with Priscilla Sperandio, one of the monitor; (C) Game to explain the importance of the species as seed disperser, (D) Closing activity to sum up the most important things learnt during the day, with Vanessa Ellen Wendt Campos and Rachel Duarte Ramos, two of the monitors; (E) Some of the participants from the school of Guareí and the monitors; (F) The monitors of the "Black Lion Tamarins' walk", from left to right and from up to down: Mayara Mulato, Giuliana Garcia, Thabata Rodrigues, Vanessa Ellen Wendt Campos, Bruna Lopes, Neli Fidencio, Priscilla Sperandio, Rachel Duarte Ramos, and Laurence Culot.

species is threatened and why it is important to protect it. The activities broached the following topics: primate distribution, Black Lion Tamarin diet, the role of Black Lion Tamarins as seed dispersers, the importance of the forest for the protection of the species and the effect of fragmentation on gene flow (Figure 2). The event had a great success and we hope that, by reaching the young generation, the word to protect the Black Lion Tamarins will be spread to all ages. In order to measure that, we planned a new survey to re-evaluate the knowledge of the population about the species in the beginning of 2016.

Together with the Secretaria do Meio Ambiente of the Municipality of Guareí, undergraduate and graduate students from UNESP-Rio Claro actively prepared the event through workshops organized twice a month from March to November 2015. We have now a solid group involved in the conservation of the species that will continue its actions in the region but also in other areas of occurrence of the species. This experience gave to students the opportunity to learn about the species and to use this knowledge in concrete conservation actions.

Golden-Headed Lion Tamarins invading Rio de Janeiro

– the problem is not over yet!

Cecília Kierulff

In 1994, a private collector released 2–3 couples of golden-headed lion tamarins (Leontopithecus chrysomelas) in a protected area in Niterói, Rio de Janeiro. Golden-headed lion tamarins do not occur naturally in the state of Rio de Janeiro, the domain of the golden lion tamarin (L. rosalia). The introduction and invasion of these golden-headed lion tamarins in the geographic range of the golden lion tamarin is a serious threat to the native species' survival. They could occupy the forest otherwise available for dispersing golden lion tamarins and would compete with or even expel them. The chances are high that the two species would hybridize (hybrids are known from captive studies), with foreseeable disastrous consequences for the golden lion tamarin, and all the efforts that have been made over the last 40 years for its protection and conservation.

In 2011, the Instituto Pri-Matas began a program to capture and remove the groups of GHLTs in Niterói. The translocation was funded by the Lion Tamarin of Brazil Fund, The Mohamed bin Zayed Species Conservation Fund, the Margot Marsh Foundation, Fundação Grupo Boticário, the Primate Action Fund of Conservation International, RBO Energia S.A. and Porto Sudeste (Câmara de Compensação Ambiental/Secretaria do Meio Ambiente Rio de Janeiro), Tropical Forest Conservation Act/Fundo Brasileiro para Biodiversidade (TFCA/FUNBIO) and Ouwehands Zoo Rhenen. The capture and relocation of the groups was carried out in partnership with the Instituto Chico Mendes (ICMBio), Instituto Estadual do Ambiente do Rio de Janeiro (INEA-RJ), NGOs and the local communities of Niterói, São Gonçalo and Maricá.

The Rio de Janeiro Primate Center (CPRJ) provided

Photos by Tiago Ferreira da Silva

facilities for quarantine, and we used part of the funds we received to build the necessary enclosures, away from those of the other primates. Each GHLT group was housed separately in large cages during 30 days and then transported by aeroplane (by TAM airlines at no cost), and by truck to a release site in southern Bahia. We partnered with the Veterinary School of the University of São Paulo, and vets and their collaborators gave their time and expertise to carry out the necessary tests and examinations. The Environmental Institute of Rio de Janeiro state (INEA) refurnished a house inside the forest for the team in Niterói, and supported us in providing space for meetings, and dealing with the local communities and schools in the area. The Instituto Pri-Matas contracted two biologists, two field assistants and a veterinarian. The biologists first spent two weeks with the Golden Lion Tamarin Association team to train in the capture and monitoring methods.

From June 2012 to November 2016, we captured 155 groups of L. chrysomelas in Niterói (849 individuals): groups were either translocated to Belmonte in Bahia (within the original species' distribution) or maintained in captivity.

On 3rd November 2016, we captured an individual that we thought was the last one—we had failed to find or receive new information about any other lion tamarin groups or individuals for two months. We continued our surveys until the end of December, 2016, but the funds to maintain the project were dwindling. In January, when we were disarming the camera-traps and playing the golden-head lion tamarin vocalizations to be sure that there were no other GHLT in the area, we heard a group answering the play-back! We were surprised and sad; we were already packing up to leave. We were really hoping that we had removed all the golden-headed lion tamarins, but we were wrong. Although we knew we had to continue to monitoring the area for at least one year to be sure that all groups and individuals were captured there were no more funds to maintain the project and pay salaries.

Right now we are using our last cents to maintain platforms with bananas and camera-traps in the area were we heard the group, and Tiago Ferreira da Silva, now an unpaid volunteer, is travelling once or twice a week to Niterói to check the photos. To date, we have had no success in finding that group, and we have no funds to carry out an intensive survey, but we will continue using bananas to attract the group until the end of February.
The forest in Niterói is very large, and maybe there are some solitary individuals that dispersed from their family groups that have yet to be located. These individuals are more difficult to capture since they do not have a defined territory and are largely vagrant. The GHLTs cannot be allowed to remain in Niterói because they are extremely invasive, they reproduce year round (because people feed them), two or more females breed in each group, and the home ranges of the groups overlap. We cannot stop now. We must be certain that all individuals have been removed or all the effort and money spent will be in vain. It is vital that we remove all invaders now, before they become again numerous and widespread and again threaten the golden lion tamarins. As far as we know, this population was begun by just two pairs, and it could grow again with just a single pair. Besides still being uncertain that we have caught all of them, our delay in capturing these last few animals, might mean that they have already seeded new groups. If we leave GHLTs in Niterói, the population will quickly expand again.

The good news is that we have recently received funds from Wildlife Reserves Singapore and the Beauval and Wilhelma zoos in Europe that will be enough for to continue our search for another two or three months, but we need more. We have received help from many collaborators and I am asking you to give a little more money to put a lid on this problem once and for all—a little from each of our many partners would make a huge difference.

Winner of the 2015 Sabin Primate Conservation Prize

Dr. Cecília Kierulff

Crisis management to keep Golden Lion Tamarins from extinction

- what we are doing and how your help can make a difference

Luís Paulo Ferraz
James M. Dietz

The purpose of this short article is to explain why Golden Lion Tamarins (GLTs) need support from the zoo community—now and for the foreseeable future. We begin with an overview of the conservation status of the species and AMLD's strategic plan to mitigate the most serious threats to survival of the species in situ. We then provide two examples of crises that have occurred in the last 6 months, each with the possibility of thwarting our efforts to conserve the species. We blocked one of these threats; the outcome of the other is in doubt at the time of this writing. More threats to GLTs and their forest certainly will come, and that is why AMLD must be there to protect them.

Golden Lion Tamarins, descendants of zoo-born tamarins reintroduced in the 1990's, now living freely in Brazil's Atlantic Forest. Photo by Andreia Martins/AMLD.

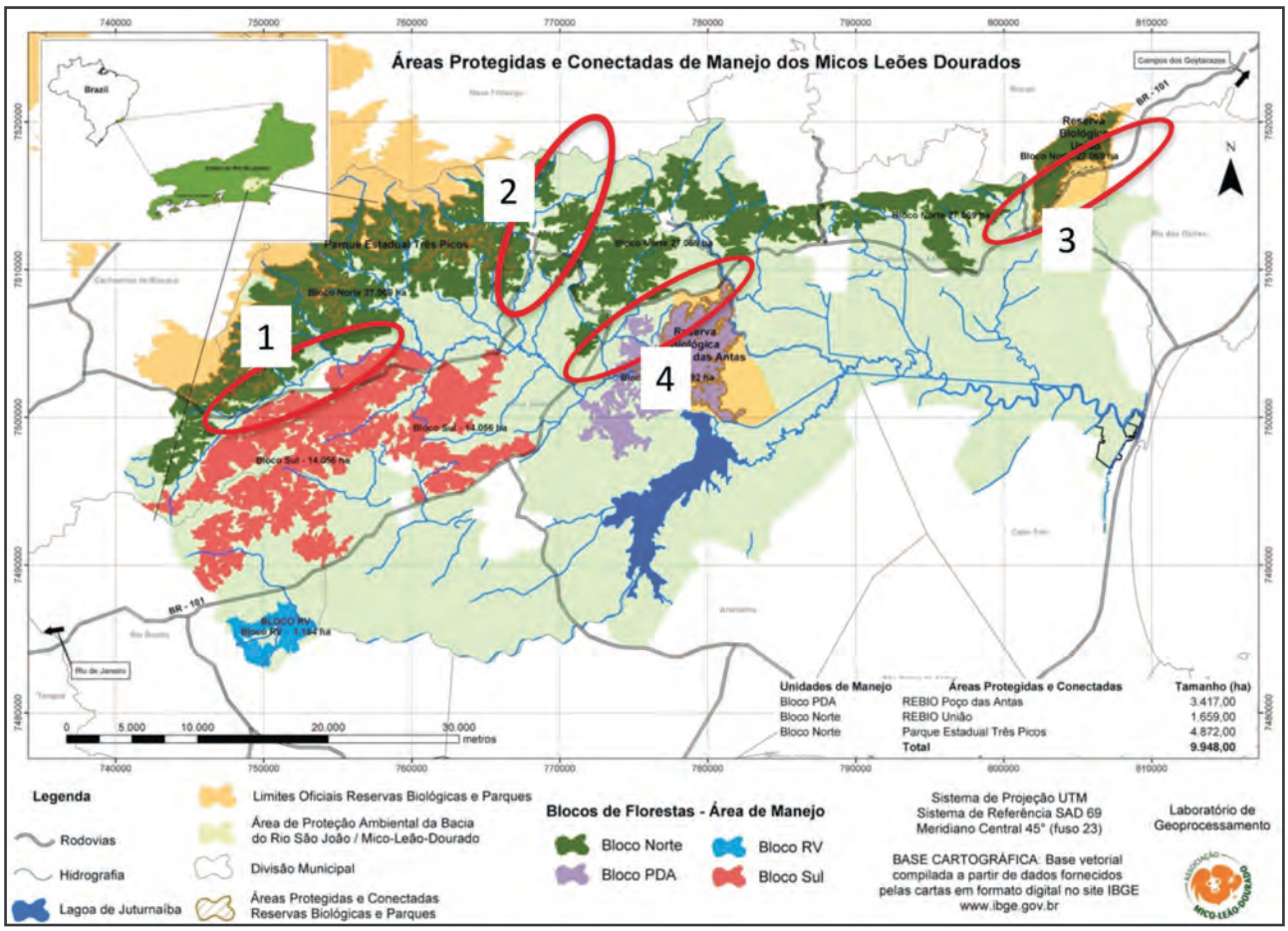


Figure 2. The São João River Basin, Rio de Janeiro state, home to all wild golden lion tamarins. Located about 80km northeast of the city of Rio de Janeiro, this forest protects a watershed that provides drinking water for over one million local people. Colored polygons (except dark blue, which is a reservoir) indicate remaining forest. Numbers indicate important breaks in forest connectivity.

Golden Lion Tamarin conservation status update

Golden lion tamarins are tiny red monkeys found only in the Atlantic coastal forest of Rio de Janeiro State, Brazil. Centuries of deforestation reduced suitable forest to 2% of the original distribution, all in fragments too small to support a viable population of GLTs. In addition, GLTs were intensively trapped for the zoo and pet trade since the 1500's. When we began work to conserve GLTs in 1983, 200 were thought to exist in the wild. The nongovernmental organization responsible for coordinating and implementing all national and international efforts to conserve GLTs is Brazil's Associação Mico-Leão-Dourado ("Golden Lion Tamarin Association"; AMLD) AMLD was created in 1992 to work toward a vision: a landscape of connected and protected lowland Atlantic Forest in northern Rio de Janeiro state (GLT habitat) that contains one or more self-sustaining GLT populations, and also provides ecosystem services contributing to human well being in the region.

Although much remains to be done, thanks to over three decades of work by AMLD and partners, including successful reintroduction of zoo-born GLTs (Figure 1), public awareness and education efforts, and rescue and repatriation of "native" GLTs, the number of GLTs in the wild now is estimated at 3,200, the species' status was upgraded from Critically Endangered to Endangered, and illegal deforestation and capture of GLTs has stopped in the region.

AMLD's membership includes local landowners and community members committed to achieving a sustainable future in the region for themselves and their children, as well as Brazilian and international

conservationists concerned about the future of golden lion tamarins and their habitat. AMLD has a locally based staff of about 15 talented and committed Brazilians including wildlife managers, geographic information system technicians, environmental educators, agricultural extensionists, community development specialists, foresters, a financial manager, and experts in environmental law and policy. AMLD's Board of Directors includes local landowners, business people, university faculty, and conservation professionals. AMLD's annual budget is about US$1 million, all of which is raised by short-term grants and projects.

The world's experts in modeling the viability of small populations agreed in five international workshops that the minimum number of GLTs necessary to keep the species from extinction is 2,000—and they must live in connected and protected forest habitat. Thus there are just enough GLTs in the wild to save the species from extinction, that's the good news. There are two challenges: first, this forest is in 12 fragments with at least four important forest disconnects, areas where GLTs cannot move between forest fragments (Figure 2). Under the current scenario, GLTs will go extinct because of loss of genetic diversity, inbreeding and other environmental factors. Thus the need to reconnect forest fragments using planted forest corridors that GLTs can safely cross. Second, this forest must be protected—and 80% is privately owned.

AMLD's Strategic Plan to Keep GLTs from Extinction

AMLD follows the Open Standards for the Practice of Conservation (http://cmp-openstandards.org/), a process of results-based adaptive management for conservation projects developed by a partnership of the world's largest conservation organizations. The Open Standards is a project-management cycle including situation analysis, planning and implementing actions, monitoring and analysis of results, adaptation, documenting and sharing learning. Using this process AMLD developed and is implementing a science-based plan to ensure the species' long-term survival in nature. AMLD's strategic plan is officially recognized as part of the Brazilian federal government's Action Plan for Conservation of the Endangered Mammals of the Central Atlantic Forest Region.

AMLD identified the current major threats to achieving its goal and their underlying causes. Examples include conversion of forest and pasture land to commercial and summer homes, widening of an interstate highway that divides remaining forests, unforeseen catastrophes such as diseases, and unsustainable ranching practices. AMLD developed and is implementing 13 strategies to mitigate these threats, restore the forest landscape, and monitor our progress in achieving our goal. We use the same science to manage the wild populations of GLTs as is used to manage the ex situ population. Our strategic plan includes strategies to work with private landowners, both small and large, and to improve their livelihood by using sustainable forest-friendly activities. For example, we help small producers to plan and implement agroforestry plots that provide forest corridors for tamarin dispersal as well as organic vegetables and fruits they can sell in local farmers' markets. We created a network of family owned commercial tree nurseries that grow and sell native tree species for reforestation in the region. We work with landowners to create permanent conservation reserves and develop ecotourism initiatives that provide sustainable income while preserving forests. We also work with the local municipalities in land-use planning that, in addition to preserving biodiversity, assures the availability of ecological services such as potable water for people in eight municipalities as well as water for a variety of industries. Perhaps most important of all is our program to train local teachers and other community educators to coach future generations about the value of the local forest and build their capacity to take action to assure the future of the forest for the benefit of all.

Very recent threats and countermeasures

BR101 is a major interstate highway linking the city of Rio de Janeiro with states to the north. Currently it is being widened to a 4-lane divided toll-way, which will make it impossible for GLTs (and other wildlife) to move between forests north and south of the highway. In February

2017, after years of advocacy by AMLD and others, a federal Judge ruled that the construction company that is widening highway BR101 must install a forested wildlife bridge (Brazil's first) over the highway to connect the forest of Poço das Antas Biological Reserve with forest north of the highway (number 4 in Figure 2). Using designs shared by several of our partner zoos, AMLD will reforest this overpass as all of Brazil watches. This victory was made possible by online petitions circulated and signed by many zoos holding GLTs.

An outbreak of Yellow Fever has been travelling through Southeast Brazil over the past few weeks. On March 14, 2017 the first human case in Rio de Janeiro state was detected in the municipality of Casimiro de Abreu, in the center of the remaining GLT habitat. Yellow Fever is carried by mosquitoes and can be fatal for at-risk humans (the young, old, and immunocompromised). It is also fatal for some New World Primates. AMLD is closely monitoring reports of sick primates as this virus could affect GLTs. To help protect both people and monkeys, AMLD is educating the public about the disease and the need for vaccination. The AMLD field team knows the region well and is transporting health workers to vaccinate people living in isolated rural areas. As of this writing, we do not yet know how yellow fever will impact the wild populations of GLTs. The maintenance of a well-managed captive population of GLTs is essential for recovery of the wild population through reintroduction should a disaster occur.

Why help now?

The current economic and political crisis in Brazil has eliminated most national sources of funding for conservation work, thus forcing AMLD to rely on international sources of support. We estimate that we have less than a decade to consolidate and protect enough forest to keep GLTs safe from extinction—before development pressure makes that impossible. This is a race we intend to win. We have come a long way, but we still have the home stretch of the marathon before us. With your help we can and will!

Your zoo can help

Make financial contributions earmarked for GLTs through the Lion Tamarins of Brazil Fund.

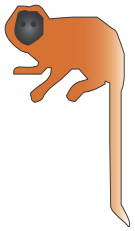
Encourage your staff (educators, keepers, communications, collection managers, exhibit designers, vets, etc.) and volunteers to follow current information on GLT conservation on these websites and social media (English: www.savethe liontamarin.org, Facebook, Twitter, and Portuguese: www.micoleao.org.br, Facebook) and to share it with your public.

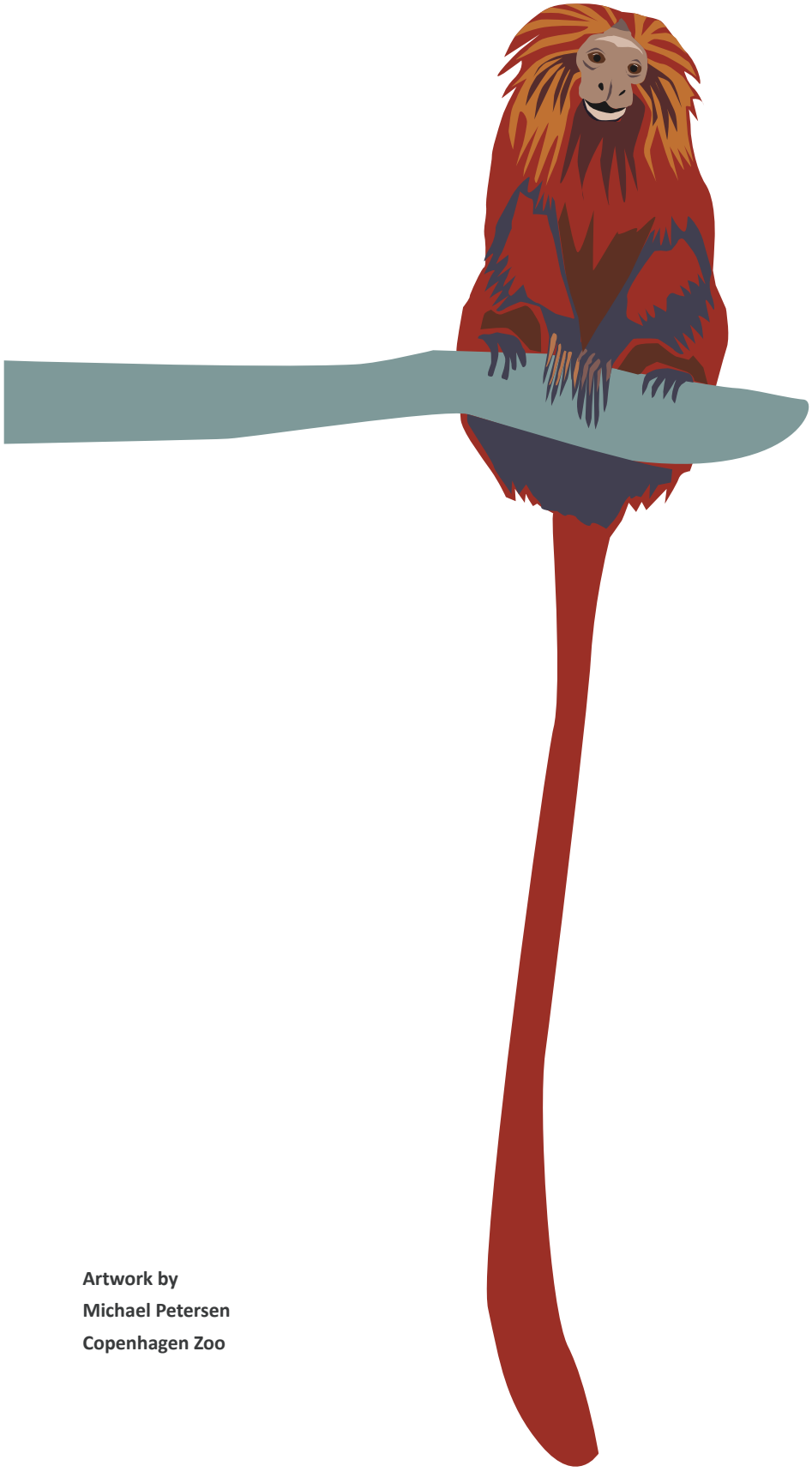
Share current information about GLT conservation and how your zoo is helping in your exhibits, your websites, and social media.

If you participate in the GLT cooperative breeding program, follow the recommendations of the GLT Studbook Keeper and provide him/her with updated information.

The following institutions have made multi-year commitments in support of AMLD's strategic plan to conserve Golden Lion Tamarins (in alphabetical order and without regard to size of financial contribution). We are grateful for your support.

- Atlanta Zoo
- Calviac Zoo
- Copenhagen Zoo
- Disney Conservation Fund—Reverse the Decline
- EDF—Norte Fluminense
- DOB--Ecology
- Dublin Zoo
- Philadelphia Zoo
- Save the Golden Lion Tamarin
- SavingSpecies.org
- Smithsonian's National Zoo





Artwork by
Michael Petersen
Copenhagen Zoo

Good news from the field

Uniao Biological Reserve was created in 1998 as a result of pressure by AMLD and partner institutions. In 2007, AMLD in partnership with SavingSpecies purchased 40 hectares of cattle pasture separating Uniao Reserve from forests to the west. AMLD reforested that cattle pasture thus linking Uniao to adjacent forests. GLTs and other mammals have been seen using the corridor.

Since its creation, AMLD has lobbied to increase the size of Uniao Reserve. This semester AMLD's Executive Secretary went to Brasilia and met with government officials concerning increasing the size of Uniao. On 5 June 2017, the President of Brazil signed a bill increasing Uniao Reserve from 2,584 hectares to 7,756 hectares, including the 40 hectares purchased and reforested by AMLD—a huge contribution to GLT conservation because it permanently protects at additional 5,000 hectares of GLT habitat.

The black lion tamarin as a key seed disperser for the interior Atlantic Forest

Mirela Alcolea
Gabriela C. Rezende
Laurence Culot

Primates can be efficient seed dispersers and play an important role in the regeneration of degraded forests. They make up 25 to 40% of the frugivore biomass in tropical forests, may ingest a high amount of seeds and are able to cover great lengths during their activity period.

There are several studies suggesting that lion tamarins (*Leontopithecus* spp.) act as dispersers of some plant species, since the swallowed seeds are viable and germinate after the animal defecates. The black lion tamarin (*Leontopithecus chrysopygus*) occurs exclusively in the Atlantic Forest of the interior of São Paulo, and due to the intense fragmentation

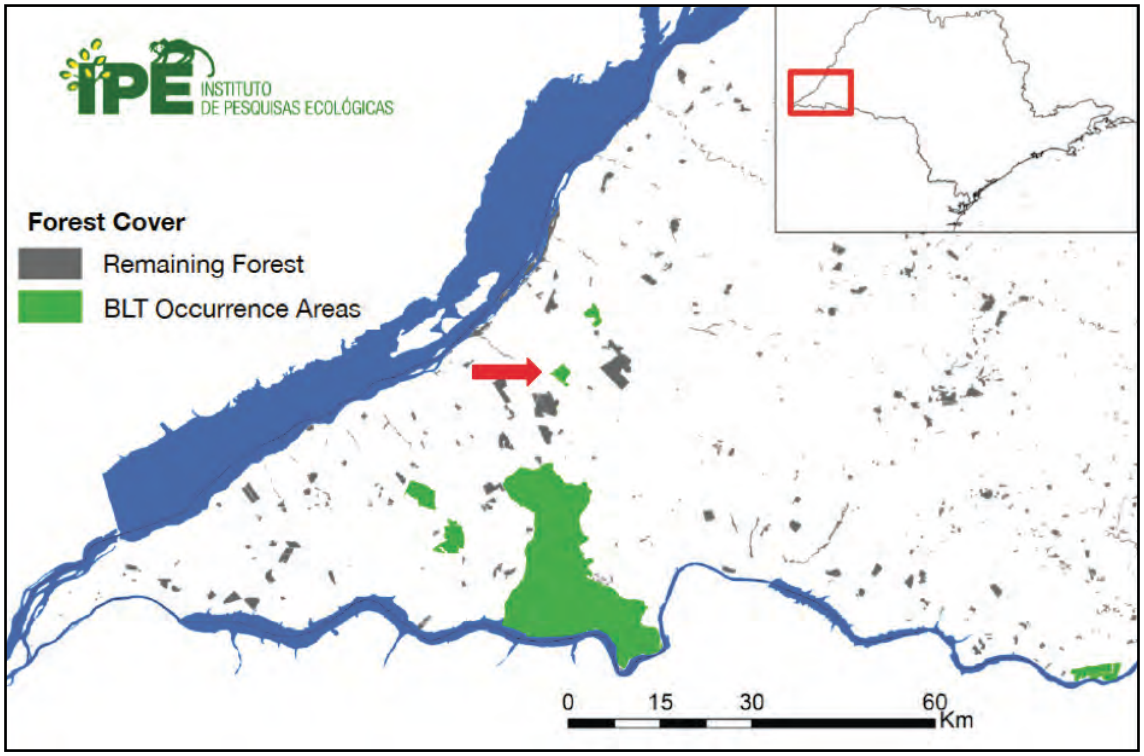


Figure 1. Map of the Pontal do Paranapanema region, where the black lion tamarin occurrence areas are presented in green and the study site indicated by the red arrow.

of its habitat, it is considered an endangered species. Its diet is composed mainly by fruits and its home range is large, varying from 40 to 400 hectares. The black lion tamarin can travel up to three kilometers in a day!
Although the black lion tamarin is not currently found through most of its original range, the species still exists where large seed dispersers, such as tapirs, agoutis and howler monkeys, have been extirpated. In this sense, the black lion tamarin can potentially be an important seed disperser in degraded and defaunated areas.
With that in mind, we carried out a study that aimed at characterizing the role of the black lion tamarin as seed disperser in a degraded forest fragment to evaluate how much this endangered species contributes to the regeneration and maintaining of interior forest areas.

The study took place in the Santa Maria fragment, a private area of 594 hectares located in the extreme west of São Paulo state in Brazil, a region known as Pontal do Paranapanema (Figure 1). It is surrounded by sugarcane plantations and pastures, and has been affected by selective logging during the fragmentation process of the region, representing one of the less well preserved forest patches in Pontal.

Between March and September 2015, in a total of 22 days, we have studied a black lion tamarin group composed of 2 adult animals (one male and one female). The animals were equipped with radio collars and were habituated with human presence. For data collection, we followed the group along the day, from the moment they left the sleeping site, which were always tree holes, until when they entered the sleeping site they would spend the next night.
We collected behavioral data during the study period and mapped all trees where the tamarins ate fruits, as well as where they defecated, to calculate seed dispersal distances. We also collected samples of the plants from which they fed on fruits, to identify the species. Feces were also collected to test their germination success. To estimate the effect of

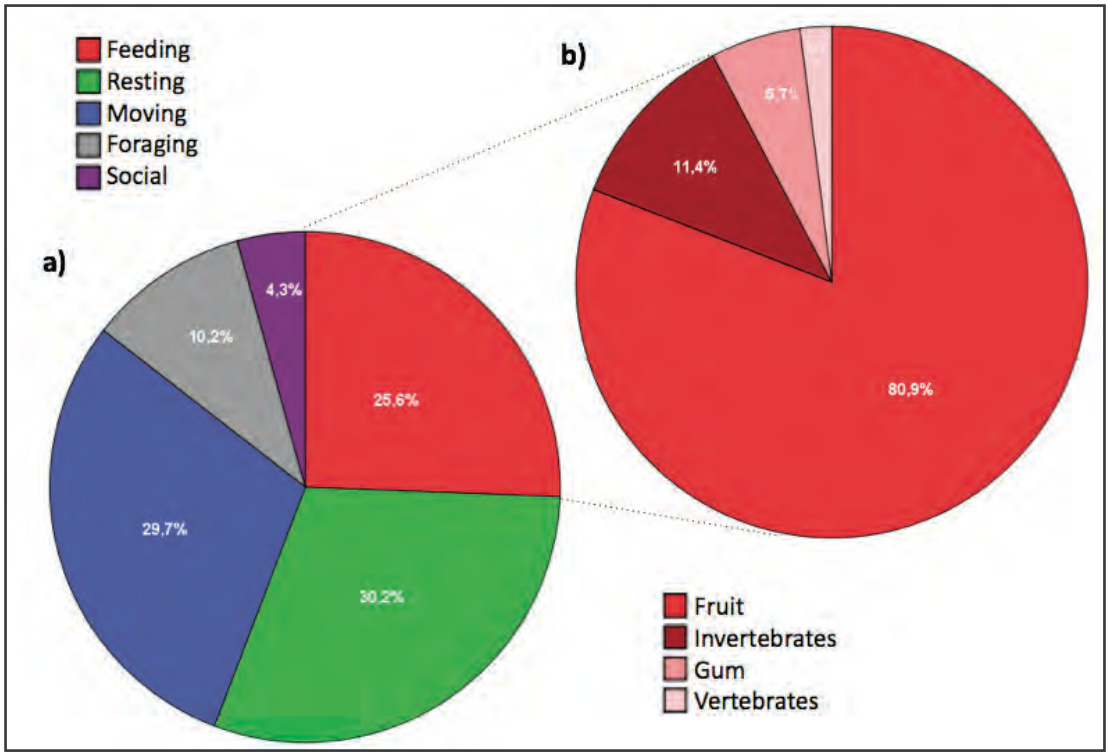


Figure 2. a) Time budget of the study group (n = 2,015 behaviors registered); b) Amount of time spent feeding on each of the dietary items.

gut passage on seed germination, we compared germination success among defecated seeds, seeds with pulp and seeds without pulp. Black lion tamarins spent 25.6% of their time feeding, of which 80.9% eating fruits (Figure 2).

In total, the black lion-tamarins fed on 11 fruit species and dispersed the seeds of 10 of them (Table 1). The relatively low number of species consumed, when compared to other studies with *Leontopithecus* spp., may be explained by the fact that the study was carried out in the dry season, when fruit availability is low.

Compared to other primates (even closely-related species), the black lion tamarins disperse seeds at extremely long distances: 343.8 (± 225.8) meters (Figure 3), within a home range of 83 hectares. For example, the golden lion tamarin (*L. rosalia*) disperse the seeds at a mean distance of 107.55 (± 97.4) meters (Lapenta 2006).

From the nine plant species tested for the gut passage effect, five germinated successfully after being ingested by the tamarins. In three of these species, gut passage increased significantly the germination success (Table 2). The other two species presented higher, but not significant, germination success in feces compared to the other treatments. Seeds of four species did not germinate, but the sample size of three of them was low. The other species is an epiphyte, and it did not germinate probably because it needs to be on tree bark to germinate (all seeds were planted in substrate).

In conclusion, the preliminary results of this study shows the potential of the black lion tamarin in contributing to the regeneration of interior forests by dispersing at surprisingly long distances most of the fruits species they consume with a positive or neutral effect on their germination success.

Family	Scientific name	Common name	Fruit color	Habitat
Arecaceae	*Syagrus romanzoffiana*(Cham.) Glassman.	jerivá	Orange/Yellow	Palm tree
Cannabaceae	*Celtis fluminensis* Carauta	grão de galo	Yellow	Shrub
Meliaceae	*Trichilia catigua* A. Juss.	catiguá	Yellow & Pink	Tree
Myrtaceae	*Eugenia* aff. *ramboi* D. Legrand	batinga-branca	Dark red	Tree
Myrtaceae	*Eugenia* cf. *hiemalis* Cambess.	guamirim	Purple	Tree
Myrtaceae	*Eugenia sp.*	café de bugre	Pink	Tree
Moraceae	*Ficus luschnathiana* (Miq.) Miq.	figueira Mata-Pau	Pink	Tree
Rubiaceae	*Randia armata* (Sw.) DC.	limoeiro-do-mato	Yellow	Tree
Viscaceae	*Phoradendron quadrangulare* (Kunth) Griseb.	erva de passarinho	Orange/Yellow	Epiphyte
Myrtaceae	*Myrcia splendens (Sw.) DC.*	guamirim	Purple/Black	Tree
Cactaceae	*Cereus hildmannianus* K.Schum.	mandacaru	Pink	Shrub

Table 1. Fruits species consumed by the black lion tamarin in the Santa Maria fragment (Pontal do Paranapanema, SP, Brazil) and its characteristics.

Species	Fruit	Seed	Feces	χ^2	P	Diff
Celtis fluminensis	0 (30)	0 (30)	10 (30)	24.599	<0,0001	-
Trichilia catigua	0 (0)	0 (2)	0 (1)	-	-	-
Eugenia aff. ramboi	15 (30)	12 (30)	21 (30)	5.7448	0,05656	S/FZ
Eugenia cf. hiemalis	11 (30)	14 (30)	16 (30)	1.7142	0,4244	-
Eugenia sp.	0 (8)	(0)	0 (2)	-	-	-
Ficus luschnathiana	26 (46)	30 (56)	43(56)	7.7782	0,02046	FR/FZ & S/FZ
Randia armata	(0)	0 (15)	0 (9)	-	-	-
Phoradendron quadrangulare	0 (30)	0 (30)	0 (30)	-	-	-
Cereus hildmannianus	(0)	5 (30)	20 (30)	16.279	<0,0001	S/FZ

Table 2. Germination success among treatments: seeds with pulp (FRUIT), with removed pulp (SEED) and seeds found in the feces (FECES). The numbers in these three columns represent how many seeds germinated, followed by the amount planted in parentheses. The difference (DIFF) indicates which treatments presented significant difference in germination when compared: FR = fruit, S = seed and FZ = feces.

Besides the scientific results presented, this study also served as an important tool for community involvement in the black lion tamarin conservation. The seed germination tests were carried out in community tree nurseries that were implemented by IPE in Pontal and that currently produce the seedlings that are used in the restoration projects in the region. The fact that the nursery owners were planting seeds ingested by the black lion tamarins had a deep emotional impact on them. To see those seeds become seedlings that would be planted in the corridors in the future, made them understand the real meaning of their effort to the conservation of the black lion tamarin.

As part of our future plans, we expect to increase the production of native seedlings of the trees whose fruits are consumed by the black lion tamarins. These seedlings will enrich the areas for the species, favoring the use of restored areas by them and ultimately resulting in population growth and reconnection, besides having an active participation of the community in the black lion tamarin conservation and making them feel part of it.

Lion Tamarins of Brazil Fund

- an update

Bengt Holst

From January 2016 to June 2017 the Lion Tamarins of Brazil Fund received a total of 59.084,41 US$. The money was received from 14 different donors from Europe and the United States. 10.000 US$ was earmarked to specific species in the framework of “adopt a group” arrangements – arrangements where each zoo contributes an amount of at least 5.000 US$ a year to a specific conservation programme and receives in exchange regular reports from the field that they can use in their conservation interpretation activities in the zoo. The reports are very popular with the zoo visitors and provide a good feeling of what is going on in the forest where the Lion Tamarins live. From the field project point of view the money is essential for their activities, and they can use the zoos as windows to the outer world – exactly in the same way that the zoos can use the field projects as a window to nature. We have thus created a win-win situation that we can all be proud of, and I can only as I did in the last volume of Tamarin Tales recommend our supporters to enter such arrangements. I will still be happy to facilitate such a process if wanted.

During the same period several grants have been been awarded to different Lion Tamarin field projects in Brazil in support of Lion Tamarin conservation. But the future of the four Lion Tamarin species is by far not safe. The current economic and political crisis in Brazil presents new challenges for conservation of all the country’s biodiversity and threatens to eliminate much of the progress made over the last 30 years for lion tamarins. The chaos in Brazil’s federal government - corruption scandals reaching to the highest levels of congress and even the presidency, the impeachment of President Dilma and calls for President Temer (former vice-president) to step down as well, and accompanying tightening of government budgets - are allowing the large-scale agribusiness lobby and other interests to dismantle much of the biodiversity protection legislation and weaken government institutions that Brazilian environmentalists have worked so hard to achieve over the last 25 years. Attempts to eliminate the endangered species lists were blocked, but attempts succeeded in weakening the Forest Code and degazetting many federal protected areas. Initiatives are underway to allow legal hunting and eliminate “licensing” that requires compensation for environmental impact of infrastructure projects.

So, although conservation efforts for all four lion tamarins have made significant progress in the last years, none of these species are “saved”. In the case of golden lion tamarins, thanks in large part to reintroduction of zoo-born individuals, there are now 3200 in the wild – enough to save the species – but these individuals are in isolated forest fragments. To assure their long-term future, the remaining forest habitat fragments on both public and private land must be protected

and connected by planted forest corridors. Habitat protection and connection is a crucial issue for the other three lion tamarins as well - securing effective implementation of protected areas, involving landowners in the protection of remaining forests on their lands, and enlisting multiple partners to maintain or plant corridors to connect the remaining forest landscape. The combination of strategies needed to restore and protect forest habitat connectivity is different for each of the four species because the socioeconomic situation affecting land use in the Atlantic Forest where each species lives is different:

In the interior of the state of São Paulo, all the remaining black lion tamarin habitat fragments are in state and federal protected areas, but they are mostly separated by long distances of large-scale agriculture. Restoring forest corridors to connect them is largely impractical; thus translocation of the tamarins may be necessary.

On the coast of the states of São Paulo and Paraná, nearly all black-faced lion tamarin habitat is connected and protected by contiguous national and state protected areas.

In the state of Rio de Janeiro, the remaining fragments of golden lion tamarin habitat are 80 km from the Rio metropolitan area (population 20 million). Federal biological reserves protect two large forest fragments, but 70% of the remaining forest is in more than 1,000 privately owned properties. The land does not lend itself to large scale agriculture or ranching, and the owners are tempted to sell to development. Thus forest conservation efforts must include development of new forest-friendly sources of income for farms as well as convincing landowners to cooperate in planting forest corridors.

In southern Bahia state, one federal biological reserve protects a portion of the habitat of golden-headed lion tamarins. Historically, the surrounding forest has been preserved by plantations that grew cocoa trees under an overstory of native forest. However, the decline of the cocoa industry is resulting in the current conversion of the forest to large scale agriculture - crops such as coffee and eucalyptus, and cattle ranching.

The lion tamarins are Brazilian symbols for the conservation of Atlantic Forest biodiversity, with their initiatives leading the way for science-based conservation action for the entire biome. Now more than ever the Brazilian organizations that are doing the work on the ground need your help not only to continue, but also to participate in and engage the Brazilian public in the science-based defense and improvement of government policies and institutions affecting the country's biodiversity. This is very important to assure not only the future of the Lion Tamarins but also all of Brazil's biodiversity.

It is thus my sincere hope that your generous support will continue in the coming years. Conservation is a question of long term commitment, and a loyal group of supporters is the best one can wish for serious conservation projects. I thus want to thank all institutions and single persons cordially who have contributed to the Lion Tamarins of Brazil Fund during the reporting period. A special thank to those who have indicated to continue their valuable support also in the years to come. All contributions, big and small, are most appreciated and are earmarked for field projects supporting Lion Tamarin conservation.

From January 2016 till June 2017 the following institutions have contributed to the Lion Tamarins of Brazil Fund:

Donations over $5,000

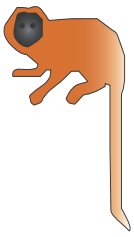
Beauval Nature
Copenhagen Zoo
Dublin Zoo

Donations $500 to $5,000

Albuquerque BioPark
Basle Zoo
Baton Rouge Zoo
Chester Zoo
Gaia Nature Fund
Jeremy Mallinson
La Vallée des Singes
Reserve Zoologique de Calviac
Stichting APCT (Apeldoorn)
Wildlife Reserves Singapore
Wilhelma Zoo
Zoo d'Asson
Zoo la Palmyre

Donations less than $500

Jerusalem Zoo



Tamarin Tales is produced by

Copenhagen Zoo
Roskildevej 38, PO Box 7
DK-2000 Frederiksberg, Denmark

Editor: Mikkel Stelvig
Email: mst@zoo.dk