Wild Life: the narrow threshold between preservation and destruction

Diagnosis of Wildlife Trafficking in the Atlantic Forest - Central and Serra do Mar Corridors

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FOREWORD

"I was equipped to like birds. For this I have plenty to be happy about. My backyard is greater than the world."

(Manuel de Barros)

The sense of belonging that invades me when I trail rainforests, rivers, mountains, valleys, woods, springs, biomes of all sorts, is indescribable. Animals in the wild fascinate and enchant me. And when I find myself amongst them, in their *habitats*, and realise the power each one of us possesses to preserve life, or destroy it - in most cases by means of a simple gesture - it reaffirms my choice to act and fight for conservation.

The threats to biodiversity are many and so complex, that at times I ask myself why focus personal, social, national and international efforts to combate only one of these threats: the wildlife trade. However the answer comes readily and brings with it greater certainty of my personal mission, and that of RENCTAS (Portuguese acronym for the National Network for Combating the Trafficking of Wildlife) a NGO which I am Chief coordinator: Of all the agressions against nature, violence towards living beings is one of the most absurd acts, and unfortunately, one of the least fought by the populace, organized civil society, or even by established authorities.

The frailty of a freightened bird inside a trap, the lost and despaired look of a caged primate, the dulled roar of a tied up feline, the pain of these lives forsaken from nature can no longer be ignored, because as more species go extinct or find themselves threatened with extinction, the poorer becomes human life itself on Earth. In order to halt a threat on nature, it must be understood. Information is a powerful weapon, especially when dealing with the fight against wildlife trafficking, a crime which moves millions of dollars annually and employs evermore sophiscated networks.

Thus, RENCTAS carried out the 1st National Report on Wildlife Trade, in 2001; and now, delved into one of the most precious and threatened biomes of the world, the Atlantic Forest, to produce the Diagnosis of Wildlife Trafficking in the Atlantic Forest - Central and Serra do Mar Corridors.

I could not conclude this brief foreword without expressing my deep gratitude to the veterinarian Angela Branco, who coordinated, with extreme mastery and responsibility, this magnificent work alongside environmental journalist Regina Macedo, veterinarian Rosana Silva Pinto and graphic designer Paulo Celestino. Also I could not fail to register my thanks to the Executive coordinator of RENCTAS, Raulff Lima, and to all the team.

Moreover, I note that the introduction of my text speaks of birds with the wonderful sensibility of Manuel de Barros. I wanted to revere not only the poet, but the birds which form close to 90 percent of animals confiscated from trafficking. But, it should be noted that our advocacy extends to all animals, from insects to large cats, alongside snakes, frogs, fish and turtles. After all, there is no such thing as an ugly or beautiful animal, there is only Life.

Dener Giovanini
Chief coordinator of RENCTAS

Northern Muriqui *(Brachyteles hipoxanthus)* - Photo: **Luciano Candisani**

1

THE PROJECT

Grasping the trafficking of wildlife within the biodiversity corridors of the Atlantic Forest and drawing guidelines in combating this environmental crime. Tasks which RENCTAS – the National Network for Combating the Trafficking of Wildlife – decided to embrace when elaborating the ***Diagnosis of Wildlife Trade in the Central and Serra do Mar Corridors of the Atlantic Forest and the Implications for Conservation of the Biome*** project. Such an undertaking was made possible with funding from the CEPF – Critical Ecosystem Partnership Fund – and support from the Aliance for the Conservation of the Atlantic Forest.

Unitying efforts and knowledge. This is how you combat wildlife trafficking.

Biodiversity is not evenly distributed around the Earth. Recent studies indicate that 25 ecosystems concentrate 60% of all the diversity of life on the planet in only 1.4% of its surface. These ecosystems, called biodiversity *hotspots*, are the richest but also most threatened regions of the world. The Atlantic Forest, with more than 6 thousand species of endemic plants (which only occur in this region), and reduced to less than 8% of its original range, is among the five most critical *hotspots*, making it a global conservation priority. And among the strategies used for conservation are Biodiversity Corridors.

Jaguar *(Panthera onca)* - Photo: **Ricardo J. Sawaya**

A Biodiversity Corridor is like a mosaic of different land uses and tenure. It integrates parks and reserves (public or private), areas of pasture and cultivation, indigenous lands, proprieties with agroforestry or ecotourism, urban and industrial centers; thus holding all citizens accountable for the conservation of nature. The objective is to reconnect the fragments of forest left which ensure the survival of species, the equilibrium of ecosystems and human well-being. It is an attempt at avoiding the loss of irreplaceable natural treasues, that time will not recover without our help.

Pumpkin toadlet *(Brachycephalus ephippium)* - Photo: **Ricardo J. Sawaya**

Each living species has its function for the planet and position in the food chain. The disappearence of one species can break this harmonious bond and endanger various environmental services. Regarding wildlife, a reduction of a population or its extinction may reflect negatively on natural events such as: pollination, the control of pests and disease vectors, nutrient cycles (water, nitrogen, carbon), slope erosion, balance in air temperature and humity, etc.

One of the environmental aggressions that brings most harm to wildlife and causes species extinctions, contributing to the decline of biodiversity, is the capture of animals in wilderness areas. A practise at above all, fuels the large illegal business of smuggling living beings. Therefore comprehending, and combating this activity should be a prime task among the many others developed under the Corridors Project as a conservation strategy.

So was born the ***Diagnosis of Wildlife Trade in the Central and Serra do Mar Corridors of the Atlantic Forest and the Implications for Conservation of the Biome*** project created by RENCTAS - National Network for Combating the Trafficking of Wildlife - with funding from the CEPF (Critical Ecosystem Partnership Fund) and support from the Aliance for the Conservation of the Atlantic Forest. The main objective of the project initially was to seek detailed information about wildlife smuggling in municipalities located in the areas surrounding the Central and Serra do Mar Atlantic Forest Biodiversity Corridors.

TRIPPING FROM THE LACK OF INFORMATION

Work began in the states of Espírito Santo and Bahia, in areas surrounding the Central Corridor of the Atlantic Forest. Early on, it was possible to notice that both states lacked specific information regarding the collecting, illicit trade, and efforts to combat these environmental crimes within the municipalities making up the Corridor. So the search for information needed to be redirected towards the state-level, at parr with bodies responsible for the licensing, enforcement, control and management of wildlife in the region.

Thus, the first workshops were carried out in Espírito Santo and Bahia, so that in an integrated and participatory manner, these institutions could contribute information for the development and consolidation of the following products within the Diagnosis project:

1) The building of a website with information on wildlife trafficking in the Atlantic Forest;

2) The creation of a database containing information on wildlife crime violations issued by enforcement bodies members of SISNAMA – National Environment System;

3) The publication of a diagnostic report about wildlife trade in the Central and Serra do Mar Corridors of the Atlantic Forest; together with a strategic plan for combating trafficking of wild animals in these corridors.

FOR PRESERVING FAUNA, TOOLS AND STRATEGIES

The workshops enabled the definition of the general content of the Diagnosis project website (www.diagnostico.org.br) and generated discussions around the creation of a database on wildlife. Like so what data would make up the database was defined and how these same could be accessed, displayed and researched.

The website became the preferred medium to provide information crucial for enforcement activities, browsing data about legislation, animal species registers, endangered species lists, news, information on the project's status, in addition to a georeferenced map pointing out municipalities buying and selling animals, and smuggling routes. Yet the database was highlighted as an indispensable tool for 'intelligence research' and the implementation of integrated actions aimed at repressing the wildlife trade, and protecting the fauna.

WITH PATH DEFINED, TIME TO EXPAND WORK

From the criteria set during the first meetings, the project remit was extended to the Serra do Mar biodiversity corridor with workshops carried out in the states of Rio de Janeiro, Minas Gerais and São Paulo.

At each event, feedback was gathered and consolidated from representatives of partner institutions such as: IBAMA, the Federal and State Public Ministry; the Federal, Highway, Environmental and Civil Police, the state and municipal secretariats of Environment, universities, research institutes and non-governmental entities.

Only at the end of the five workshops, was it possible to conceptualise the database and realise its full importance. What at first instance was an instrument for data collection (detailed later herein) ended up attaining a scale unprecedented in the fight against trafficking.

However, for this database to forge a diagnosis of animal trafficking, especially at the level of municipalities making up the Corridors, it would demand some time to supply it with data, time insufficient given the project schedule. The solution found was to procure data directly from the bodies responsible for state wildlife enforcement - environmental police and IBAMA - by means of a questionnaire that could depict the actions used, at least at the state-level, to combat and control the wildlife trade, given the impossibility of obtaining municipal-level information.

The questionnaire used was the same which served as basis for elaborating the 1st National Report about the Wildlife Trade, published by RENCTAS in 2001.

Hepatic tanager *(Piranga flava)* - Photo: **Zig Koch**

SINUOUS PATH IN SEARCH OF THE DIAGNOSIS

The national headquarters of IBAMA, in Brasília, was the first institution to receive the questionnaire, but failed to reply. Therefore, the same questionnaire was sent to its superintendencies in the five states involved in the Corridors project, as well as the precincts of the environmental police.

Some questionnaires were unreturned; others had blank or incomplete answers. This process ended up surfacing structural issues from the institutions encharged with protecting wildlife and various other duties within the environmental arena.

The questionnaires were processed and analysed thoroughly, with the results disclosed herein. Regardless, gathering more information was still necessary for consolidating data and preparing guidelines for a strategic plan against wildlife trafficking. The next step was delivering a workshop bringing together main institutional representatives from these five states and the Federal District, who were participating in the project's development. The meeting took place from November 30th to December 1st, 2006 in the city of São Paulo.

The participants were divided into two groups - Central Corridor and Serra do Mar Corridor. Discussions were guided by 30 questions presented to the groups which were exhaustively debated. Their responses were discussed at a plenary session at the end of the meeting, culminating in an important document herein published. This dynamic exchange also counted

on the participation and feedback of representatives of federal-level institutions from Brasília, like the Ministry of Environment and the Federal Police.

Despite all efforts to search for answers, the question regarding which institution should administer the database was left pending in spite of suggestions electing IBAMA.

Besides aforementioned documents and tools, renowned researchers and collaborators contributed with articles to acquaint participants about the Atlantic Forest; Biodiversity or Ecological Corridors, and wildlife trafficking. These articles demonstrate the importance and pressing need for implementing public policies geared to the management of wild fauna and the protection of this Biome.

It should be highlighted that all products that arose from the execution of this project were only achieved thanks to the participation, feedback and commitment of some 200 persons, many of them representatives of the country's major institutions whose mission is to zeal for wildlife.

PRESERVING BIODIVERSITY, A PLANETARY TASK

To gauge the importance and scope of the Diagnosis project, it is interesting to learn a bit more about RENCTAS and its partners in this venture.

RENCTAS – Is a brazilian non-profit Civil Society Organization of Public Interest whose mission is to combat illegal wildlife trade, thereby contributing to the preservation of biodiversity. Among its main strategies are environmental education, assisting monitoring and enforcement agencies, encouraging the creation of public policies and implementation of projects focused on wildlife research and conservation. Using the main ordinances of credibility, transparency and partnership building, RENCTAS has developed innovative work which binds diverse organizations from the government, private and non-profit sectors. Founded in 1999, RENCTAS stands out as one of the most active environmental organizations in Brazil earning it the acknowledgment of the United Nations Environment Programme (UNEP), as a model for other countries to adopt.

Characid *(Deuterodon langei)* - Photo: **Zig Koch**

CEPF - The Critical Ecosystem Partnership Fund, is a 150 million dollar fund destined to finance projects that conserve global biodiversity hotspots.

The result of an alliance between the World Bank, the Global Environment Facility (GEF), the Government of Japan, Conservation International and the MacArthur Foundation,the CEPF seeks to engage civil society in biodiversity conservation and promote working partnerships among community groups, non-governmental organizations, educational institutions and the private sector. The union of skills between the various groups and sectors eliminates duplication of effort, turning them more effective and far-reaching.

The CEPF adds to existing financial mechanisms, in providing funding in an agile and flexible manner, assisting non-governmental organizations and other private sector entities. It seeks to both support conservation actions already underway, and to promote new initiatives. This fund is managed in an innovative way: it finances the protection of 'biological areas' regardless of political boundaries and utilises as an underlying basis, the concept of biodiversity corridors.

ALLIANCE - In the face of what was already lost and the great natural value of the areas that still remained, two of the largest NGOs operating in the Atlantic Forest – SOS Mata Atlântica and Conservation International Brasil – deciced to join forces in order to maximise efficiency and serve as a model for other *hotspots* around the world.

So was born the Alliance for the Conservation of the Atlantic Forest. SOS Mata Atlântica and CI-Brasil merged without forfeiting their identities and work with equal levels of decision and responsibility around a common strategy. The Alliance was inspired by the 'Zero Deforestation' campaign vision developed by the Atlantic Forest NGO Network (Rede de OGNs da Mata Atlântica), and seeks to take it a step further: to include a 'zero biodiversity loss' proposal and revert the current process of destruction and species extinctions found in this biome.

A PROCESS IN MOTION. THERE IS STILL MUCH TO DO.

Finally, it should be noted, that the initial project generated far more than a timely document focused on the municipalities comprising the Corridors. It transformed into a powerful weapon in the fight against wildlife trafficking aimed not only at the five states where the Corridors were established, but for the country as a whole, which is precisely the goal of the database and all supporting services available through the Diagnosis project website. This publication complements this work with information on the trends of illegal trading in wildlife, the difficulties faced by institutions responsible for the preservation of fauna and, above all, points out guidelines for combating trafficking.

For it being a contant process, there is still much to do. Everything must be accomplished within a short space of time, as natural processes develop over thousands or millions of years, but the imbalance and irreparable destruction on biomes and their rich biodiversity occurs swiftly.

Dusky-legged Guan *(Penelope obscura)* - Photo: **Armando Catunda**

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CORRIDORS, HOPE FOR THE FOREST AND FAUNA

One of the richest regions on the Planet in terms of biodiversity and endemism is the Atlantic Forest. All this richness always attracted human envy, which turned this biome so threatened to the point of being considered a global priority area for conservation *(hotspots)*. In this sense, the Biodiversity Corridors project is essential. However, projects and mobilizing civil society alone do not suffice; the political will throughout government levels is imperative in order to truly bar the accelerated destruction of the Atlantic Forest and its rich biodiversity. Wildlife is one of most threatened resources: it suffers with deforestation and, even in more preserved areas; it ends up a victim of trafficking and poaching. In the articles that follow, discover more about the Corridors project, the plight of wildlife, and the environmental crime called wildlife trafficking.

Biodiversity Corridors – changing the scale of biodiversity conservation.

Luiz Paulo Pinto*

The Brazilian context when dealing with biodiversity conservation, is considered one of the gravest and most challenging in the world. We possess one of the most notable biotas of the world, but the Brazilian biomes have dramatically lost their native vegetation cover through deforestation for the advancement of agriculture, pastures and other forms of land use, besides the dynamic process of urbanization (Brandon *et al.*,2005).

As a result, the last assessment of Brazilian fauna threatened with extinction indicated a list of 633 species, 126 being critically threatened, that is, with extremely reduced populations or close to extinction if concrete conservation measures are not taken (Machado *et al.*, 2005).

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One of the most recognised and used forms to guarantee the protection of these species and ecosystems, is the creation of conservation units i.e. national parks, biological and extractive reserves etc.

According to the National System of Conservation Units (SNUC), these conservation units are territorial spaces with relevant natural characteristics legally instated by Government, with goals of conserving biodiversity and other natural assets contained therein, with minimal human impact. There are more than 100 thousand conservation areas distributed over 130 countries worldwide (Chape *et al.*, 2003).

Brazil possesses a relatively extensive system, with more than 1,600 public and private conservation units (Rylands & Brandon, 2005). Of these, 56% are public areas (federal and state) and 44% private (RPPN[1] federal and state), totaling circa 112 million hectares.

Such figures impress but when examined in detail, we see that the Brazilian system is still weak and does not adequately protect the country's enormous biodiversity. In considering only the fully protected conservation units (i.e. those areas that restrict access but represent the greatest potential for the conservation of biodiversity) about 4% of Brazil's territory is officially bestowed with this goal.

It must be noted that the portion of Brazil's territory under conservation units is not distributed according to representativeness criteria throughout different regions of the country; resulting in large system gaps in protection. This limitation is compounded by the high biological diversity contained in the different Brazilian biomes - we are considered a mega-biodiversity country (Mittermeier *et al.*, 1997) - and the clear geographical distortions of the country's conservation units system (Fonseca *et al.*, 1997).

[1] The Private Natural Heritage Reserves (RPPN), established since 1990, are recognized as part of the national system of conservation units. The RPPN is a category of protected area instated in areas of private ownership, by initiative of its proprietor and upon acknowledgment by Government (Costa, 2006).

The Amazon region has around 19% of all conservation units, but accounts over 80% of the total area protected in Brazil (Fonseca *et al.*, 1997; Rylands *et al.*, 2005). Alternatively the Atlantic Forest, one of the most threatened biomes on the planet; considered a global *hot-spot*[2], houses nearly half the total number of conservation units, but is responsible for only 8% of the land area protected in the country.

The Atlantic Forest has less than 2% of its territory protected by conservation units, i.e. 98% of its space houses other forms of land use (agriculture, towns, roads, hydro-electric dams, forest fragments etc.), and the average size of these units is circa 10 thousand hectares, which is not enough to protect biodiversity in the long-term (Pinto *et al.*, 2006).

Still holding the Atlantic Forest as an example, the momentum of destruction was substantial, causing severe alterations to the ecosystems that make up this biome. In particular, due to the high habitat fragmentation and loss of forest cover, it is now estimated its area is less than 7% of its original cover (Hirota, 2003). As a consequence of this, the vast majority (60%) of Brazilian animals and plants threatened with extinction are found in the Atlantic Forest, and the biome's predominant landscape is strongly dominated by man (Machado *et al.*, 2005). This situation demands urgent planned conservation measures, at a scale far larger than what has been applied to date.

Not only could the biodiversity of the country decrease, but so too for regions like the Atlantic Forest, or states due to the degradation of natural ecosystems. Additionally, the communities and species protected within officially recognised conservation units will experience progressive loss owing to the growing isolation or 'marooning' of these protected areas.

[2] Biodiversity hotspots are areas that present unique biological diversity, with a wealth of endemic species (at least 1,500 species of endemic vascular plants) i.e. occurrqing only in a given area, and that at the same time, suffer serious threats from destruction, having lost at least 75% of the original vegetation cover. Throughout the world, 34 hotspots have been identified (Mittermeier et al., 2004).

Cachoeira do Caldeirão - Morro do DiaboState Park - SP - Photo: **André Camilli Dias**

If the degree of a reserve's exposure to the surrounding environment is high, its effective size will be progressively reduced by the deterioration of its *habitat*, starting from their outer edges. In this context, science now recognizes that conservation units alone will not guarantee the protection of biodiversity in the long-term (50, 100, 200 years or more). Therefore, it will be necessary to incorporate into conservation strategies, the areas directly influenced by man. That is, the different forms of land use should permit the survival of species and environmental processes (cycles of water, nutrients, pollination, dispersal of seeds and individuals etc.) to help complement conservation units (Ayres *et al.*, 2005; Fonseca *et al.*, 1997; Fonseca *et al.*, 2006).

Studies show that various species are capable of moving along environments already disturbed by human activity. The effective protection of these species throughout strategic areas located between conservation units or large blocks of suitable habitat, would constitute a more efficient and less costly mechanism than seeking to physically connect the thousands of forest fragments scattered across the landscape (Fonseca *et al.*, 2004).

In this sense, a regional emphasis on conservation gained strength as an essential strategy to guarantee the long-term protection of biodiversity. This new approach has as a main focus the implementation of so-called "Biodiversity Corridors", and includes the development of conservation actions at different scales (from local up to regional). This ensured the selection of strategic and sufficiently large portions of natural environments, seeking to represent different ecosystems and also maintain, or increase, levels of connectivity between different areas; particularly for conservation units (Ayres *et al.*, 2005; Sanderson *et al.*, 2005).

NB.: The term "Biodiversity Corridor" is used here to designate this new approach in the conservation of biological diversity and represents a type of spatial planning.

With the enactment of the SNUC Law, ecological corridors became defined as "portions of natural or semi-natural ecosystems, linking conservation units, that enable gene flow and the movement of biota between them, facilitating the dispersal of species and the recolonization of degraded areas, as well as maintaining populations that require for their survival areas with greater extensions than that of individual units" (SNUC Article 2o item XIX).

The establishment of corridors linking isolated populations would be one of the possible strategies to minimize risks of extinction for species inside such areas. However, as previously mentioned, the absence of zones with physical links between fragments does not mean that the exchange of animals and plants cross these is nonexistent (Fonseca *et al.*, 2004). A set of small isolated fragments, albeit close together, could effectively provide access routes for fauna and flora, hence broadening the strategies used for protecting biodiversity.

Currently various conservation initiatives exist in Brazil that utilize the biodiversity corridors approach (Arruda, 2006). One of the most recent proposals for creating and implementing biodiversity corridors can be found in the "Ecological Corridors" project design, which seeks to establish this strategy in the Amazon and Atlantic Forest, under the remit of the Ministry of Environment and the Protection of Brazilian Tropical Forest Pilot Programme (PPG-7)(Ayres *et al.*, 2005).

Corridors are not political or administrative units, but extensive geographical areas defined by biological criteria for planning and conservation purposes. One of the requirements of this approach is that corridors should be set up in areas important for biodiversity conservation, taking into consideration species richness, the occurrence of endemic and threatened species, communities and unique natural phenomena, the number and size of conservation units etc.

For example, in the Atlantic Forest some biodiversity corridors have already been identified, such as: the Northeast Corridor (between Rio Grande do Norte and Alagoas); the Atlantic Forest Central Corridor (south of Bahia and Espírito Santo); the Serra do Mar Corridor (Rio de Janeiro, Serra da Mantiqueira - in southeastern Minas Gerais; the Atlantic Ombrophulys Dense Forest of the State of São Paulo; and the Guaraqueçaba region, in the north of Paraná) among others (Pinto *et al.*, 2006). All these regions are special and stand out from others in the biome, for possessing a great wealth of fauna and flora and many endemic species i.e. species that only occur in these regions and nowhere else on the planet (Silva *et al.*, 2004).

The planning of corridors should incorporate interventions at different spatial (from a conservation unit, to a watershed basin, up to an entire state) and temporal scales (immediate, near-future, to actions envisaged to last decades), seeking alternatives for a more encompassing, gradual, decentralized and participatory form of biodiversity conservation (Fonseca *et al.*, 2006). Whereas in *hotspots* (Atlantic Forest and the Cerrado) the goal is to increase connectivity between natural environments in the major wilderness regions[3] (Amazon and Pantanal), to plan and regulate the use of landscapes and preserve existing natural vegetation cover.

[3] To be classified as a Major Wilderness Region, areas must have more than 10.000 km2 with, at least, 70% of its original vegetation intact and having a low population density, with less than 5 persons per km2. Excluding the large urban centers, the 37 Wilderness Regions cover 46% of the terrestrial surface, covering all continents (Mittermeier et al., 2002).

Beetle spp. - Ubatuba - Photo: **André Camilli Dias**

Other important activities for the implementation of a Biodiversity Corridor are: combating poaching; the creation of new public and private conservation units; stimulating the conservation of strategically located forest areas; encourage the natural or assisted regeneration of forests; changing patterns of land use; developing economic activities compatible with biodiversity conservation, following clear sustainability criteria on the use of natural resources; and creating ecological corriodrs between remnants of native vegetation. However, there does not exist a definite way for attaining these results. Therefore, each corridor has their specific characteristics and will require leverage between public policies and the communities working within their range.

In implementing corridors, coordinated actions will be needed that address the strengthening, expansion and connection of the protected areas system, and which encourage a landscape where Permenant Preservation Areas (APPs) and Legal Reserves (RLs) are conserved or restored according to the law, and where

the appropriate and sustainable use of soils and renewable natural resources is fostered.

Since its conception, biodiversity corridors have been adopted by various public organizations (Federal Government and States) and by non-governmental organizations as a conservation strategy (MMA, 2006; Arruda, 2006). The successful implementation of biodiversity corridors requires a high degree of involvement and cooperation between the various governmental institutions, private businesses, and civil society organizations that work in the target region. Hence the strategy also seeks to reconnect people to the natural environment, as well as fostering exchange among institutions.

The implementing of a biodiversity corridor can be considered an ambitious project, however the momentum of threats is also of unprecedented magnitude. It is hoped that this approach brings with it a novel and promising contribution for a dymanic and integrated landscape management, so that with it, achievements are

Nest - ES - Photo: **André Camilli Dias**

broadened and results in conserving biodiversity are pooled in Brazil and worldwide.

Some corridors are already being implemented, and rely on a similar working process, but include diverse stakeholders and contexts: in the Amapá Biodiversity Corridor (9.5 million hectares), the state government coordinates one of the largest forest corridors in the world in conjunction with NGOs; in the Emas-Taquari Biodiversity Corridor (9.8 million hectares), municipalities, private sector and NGOs share in the connection strategy linking the Cerrado and Pantanal; whereas the Atlantic Forest Central Corridor (12 million hectares) showcases a more complex structure, involving a wide array of different spheres within public administration - the Federal Government, and the states of Bahia and Espírito Santo, NGOs via the Atlantic Forest Biosphere Reserve Comittee, and the private sector - corporations and owners of private reserves (CI & IESB, 2000; Prado *et al.*, 2003; Fonseca *et al.*, 2006; MMA, 2006).

If these projects prove successful, the target regions for biodiversity corridors, in their majority, will be mosaics of natural areas composed of conservation units protected from human influence. As well as the entire surrounding landscape under different forms of land use, which would be determined by management practices most befitting the local socio-economic reality. Lastly, biodiversity corridors have great potential for stimulating networked participation and for the integrated environmental management in strategic areas, thus providing better chances for conserving biodiveristy in the long-term.

Collared Anteater young *(Tamandua tetradactyla)* - Photo: **André Camilli Dias**

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Hummingbirds in nest - Photo: **Carlos Renato Fernandes**

Diversity and threats in the Atlantic Forest

Adriano Paglia*

Despite marked devastation, the Atlantic Forest still harbours a significant portion of Brazil's biological diversity, with very high levels of endemism and over 2,300 species of vertebrates. Of these, it is estimated that approximately 740 species are endemic, which represents 32% of all vertebrates that occur for that biome (Table 1). For certain groups this uniqueness is even more pronounced. Around 80% of the 24 primate species of the Atlantic Forest occur nowhere else on the planet. Some genera of primates, such as the *Leontopithecus* and *Brachyteles*, are biome endemics.

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The level of diversity and endemism in plants is even more impressive. There are an estimated 20 thousand species, of which around 8 thousand are endemics. The high level of species richness and endemism, combined with the great anthropogenic pressures to this biome, place the Brazilian Atlantic Forest amongst the top 5 most threatened hotspots on the planet.

Table 1 – Total species count, endemism and number of threatened species of vertebrates and plants in the Brazilian Atlantic Forest

Taxa	Total species count of Atlantic Forest	Endemic of Atlantic Forest	Threatened (IUCN 2006)	Threatened (IBAMA 2003)
Birds	992	188	83	101
Mammals	270	90	43	41
Reptiles	197	60	14	13
Amphibians	372	340	6	16
Fish	350	133	6	-
Subtotal Vertebrates	2181	811	152	171
Trees and shrubs	~20.000	~8.000	~200	28
Total	**~21.181**	**~8.811**	**~355**	**199**

The threat status of the biome is reflected in regional and global species threat assessments. The International Union for the Conservation of Nature, IUCN, states in its 2006 Red Book, a total of 355 species of Brazilian fauna falling under some category of threat. In assessing the geographical distribution of these species, it is noticed that 187 of them, more than 52%, occur in the Atlantic Forest (Table 2). The threat levels are even higher when one considers the Official List from IBAMA, released in 2003. Over 60% of the 627 species on the Brazilian listing occur in the Atlantic Corest (Table 2).

In terms of all vertebrates found in the Atlantic Forest, somewhere around 6 to 8% are considered endangered. These figures may in reality be larger, since we know very little about the biological and ecological aspects of many vertebrates species, especially amphibians and reptiles, and the little known often applies to only a single locality where the species occurs, hence insufficient to portray an accurate assessment of their threat status.

Table 2 - Number of species of fauna of the Brazilian Atlantic Forest listed as endangered by IBAMA's Official List and the IUCN list. The threat categories listed in the table are: CR= Critically Endangered; EN = Endangered; VU= Vulnerable; EW= Extinct in the Wild and EX = Extinct.

GROUPS	IUCN 2006						IBAMA 2003					
	CR	EN	VU	EW	EX	TOTAL	CR	EN	VU	EW	EX	TOTAL
Mammals	8	9	21	0	0	38	9	6	25	0	0	40
Birds	14	19	1	41	0	75	12	32	53	1	2	100
Reptiles	3	2	9	0	0	14	5	2	6	0	0	13
Amphibians	4	6	10	0	1	21	7	3	3	0	1	14
Fish	0	0	0	6	0	6	24	18	38	0	0	80
Inverte-brates	8	9	13	0	3	33	26	42	63	0	2	133
Atlantic Forest	37	45	100	4	4	187	83	103	188	1	5	380
Brazil	60	79	209	1	6	355	125	163	330	2	7	627

Golden Lancehead (*Bothrops insularis*) - Photo: **Otavio Marques**

Through the Official List of Brazilian Endangered Species, promulgated by IBAMA in March 2003, seven species have been considered extinct in Brazil. Of these, four occurred in the Atlantic Forest. To cite but two, the Spiny-knee Leaf Frog (*Phrynomedusa fimbriata)*, nor the Glaucous Macaw (*Anodorhynchus glaucus)* have been recorded in the last 50 years. According to IUCN criteria, which were adopted in the revision of the official IBAMA list, a species is considered extinct if, it is admittedly known that the last individual of the species perished, or despite intensive search efforts, the species is no longer found in its area of distribution.

The status that precedes the label extinct is the category "Critically Endangered" (CR), therefore special attention must be given to species listed in this category.

In the Atlantic Forest, noting the official IBAMA listing, there are 83 taxa, of which 26 are invertebrates and 57 vertebrates. An important point is that many of the vertebrates in the Atlantic Forest listed as Critically Endangered are endemic to the biome. This is the case for five of the seven species of amphibian, nine of the 12 bird species, seven of the nine species of mammals and all five species of reptiles of the Atlantic Forest, fitting this category. Among the nine Critically Endangered mammals, seven are primates, including the Northern Muriqui *(Brachyteles hypoxanthus)* and the Yellow-breasted capuchin *(Cebus xanthosternos)*, two of the wolrd's most threatened primates, and that occur in the Atlantic Forest Central Corridor.

Also in the "Critically Endangered" category, 13 bird species appear, such as the Cherry-throated tanager *(Nemosia rourei)* and the Stresemann's Bristlefront *(Merulaxis stresemanni)*, two birds unique to the Atlantic Forest Central Corridor: the former, in the State of Espírito Santo, and the latter in Bahia.

In the Serra do Mar Corridor, at least 16 Critically Endangered species of vertebrates are found. Examples include the Black-faced Lion Tamarin *(Leontopithecus caissara)*, which inhabits the Island of Superagui, on the north coast of the State of Paraná; the birds

Restinga Antwren *(Formicivora littoralis)* and Kinglet Calyptura *(Calyptura cristata)*, endemic to the State of Rio de Janeiro; and animals endemic to oceanic islands, like *Scinax alcatraz*, the Alcatrazes Lancehead *(Bothrops alcatraz)* and the Golden Lancehead *(Bothrops insularis)*, from the Island of Queimada Grande, both islands from the coast of the State of São Paulo.

Perhaps the most urgent measure for conserving these Critically Endangered species is to ensure that all of them are protected in Fully Protected Conservation Units. Unfortunately this is not the case for many of these species. Moreover, our knowledge about the geographical distribution of these species is still incipient, or remains diffuse.

Part of the strategy is the compilation, structuring and consolidation of a Database, with occurrence records for threatened Atlantic Forest vertebrate species. This database would provide the basis for the identification of Key Biodiversity Areas *(KBAs)* for the biome.

Key areas for conserving biodiversity are patches of *habitat* (like forest remnants) or sets of *habitat* patches capable of maintaining viable populations in the long-term (Eken *et al*. 2004). They are denoted by the confirmed presence of: globally endangered species, species of restricted distribution and by large numbers of individuals of the same species, which congregate during some stage of their life cycle, for reproduction, feeding etc.

Conservation International, in a project partnership with Birdlife International, identified 553 key biodiversity areas in the Atlantic Forest, utilizing the species occurrence data of 143 terrestrial vertebrates (36 mammals, 73 birds, 14 reptiles and 18 amphibians). Of all the areas identified, 81 areas (14.65%) are Conservation Units, public or private, under 'Full Protection' or 'Sustainable Use'. The remaining 472 (85%), are not under any form of legal protection. These areas are small (less than 1000ha) and isolated, often located within private properties.

Mantled Hawk (*Leucopternis polionota*) - Photo: **André Camilli Dias**

Integrated actions in the management of species, conservation and protection of habitat remnants, forest restoration and landscape planning, involving various sectors of society, are necessary measures to guarantee the maintenance of these areas, of global importance to conserving biodiversity in the long-term. In this regard, the strategy of Biodiversity Corridors is fundamental for the success of conservation.

Biodiversity Corridors represent a regional planning approach for conservation. A biodiversity corridor contains a network of protected areas, interspersed by areas with varying degrees of human occupation in which management is integrated to increase the possibility of survival for all species, the maintenance of ecological and evolutionary processes, and the development of a regional economy based on the sustainable use of natural resources (Sanderson *et al.*, 2003).

The biodiversity corridors approach is used to address the different scales of environmental protection (from the local to regional) seeking to represent different ecosystems, systemically managing the network of conservation units and also uphold or increase levels of connectivity between the different areas (Fonseca *et al.*, 2004).

In the Atlantic Forest, the Biodiversity Corridors were defined based on the identification of centers of endemism. Although the extension and location of areas of endemism are still a matter of controversy, at least five areas can be recognized based on terrestrial vertebrates (Müller, 1973; Kinzey, 1982; Costa *et al.*, 2000; Silva *et al.*, 2004), invertebrates (Tyler *et al.*, 1994) and plants (Prance, 1982; Soderstom *et al.*, 1988): the Brejos Nordestinos, the Center of Pernambuco, the Center of Bahia, the Coastline of Bahia and Serra do Mar (see Silva *et al.*, 2004).

Based on these centers of endemism, three Atlantic Forest biodiversity corridors were defined: the Northeastern Corridor; the Atlantic Forest Central Corridor and the Serra do Mar Corridor. Estimates indicate that, if adequately managed, these corridors can collectively protect 75% of endangered species in the Atlantic Forest and a significant portion of the hotspot's total biodiversity.

Much of our current effort is in providing suitable conditions for the preservation of these endangered species. The strategy to revert this scenario is to enhance the efficiency of our system of conservation units, through the innovative concept of Biodiversity Corridors, which seeks to integrate existing protected areas with the surrounding landscape and remnants remaining in private lands.

Only with much work and the broadened awareness of all can we one day lift the Atlantic Forest away the category of one of the world's five most threatened *hotspots*, and guarantee the preservation of a unique ecosystem full of diversity and opportunities.

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Green Ameiva *(Ameiva ameiva)* - Photo: **Tirone Takahasi**

The wildlife trade

Raulff Lima*

The great species richness and high level of endemism transform the Atlantic Forest into a target for international smugglers, who make crimes against wildlife a highly lucrative activity.

Of all aggressions inflicted onto Brazilian biodiversity, the wildlife trade is the most cruel and one of the factors responsible for the extinction of species. The illegal trade of wildlife is the third largest ilicit business worldwide, surpassed only by the trade in weapons and drugs. It is believed that annually, this activity moves between 10 to 20 billion dollars globally, and Brazil accounts to about 10% of the share. Recent reports point to 38 million Brazilian animals being taken out of their *habitats* to fuel this illegal market.

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Most trafficked animals originating from the Atlantic Forest are sent to the cities of Rio de Janeiro and São Paulo, where they are sold in open markets or specialized shops. Many of these animals are exported through the ports and airports of these cities, or the regions where they are found, to the United States, some European countries and Japan. The logic behind trafficking is cruel: the more threatened a species, the greater will be its value when hitting the black market.

The social chain involved in the wildlife trade is made up basically of three groups with very distinct characteristics: the suppliers, the intermediaries, and the consumers.

Among the suppliers are people from some of the poorest ranks of society hailing from the country's interior, devoid of resources and without access to education. Through hunting for sustenance they discover in the wildlife trade a supplementary source of income. Included in this category are some traditional communities, corrupted and stimulated by smugglers to exploit natural resources.

Intermediaries transit between rural areas and urban centers. These include bargemen who travel mainly throughout the North and Northeastern regions, farmers, truckers, bus drivers and street vendors. Afterwards, small and medium dealers make the connection with the large criminal organizations that operate within and outside the country.

Larger sized contraband involves Brazilian merchants, or foreigners familiar with the art of corruption, and who can move rapidly between countries when they feel threatened. International trafficking is sophisticated and includes tactics like bribery, fraud and forgery, in addition to relying on some researchers who have access to international trafficking schemes. It is calculated that of the total volume of animals involved in trafficking, around 60% are sold inside the country, and the remaining 40% are destined for the international market.

There are many people who keep wild animals as pets. These consumers are divided into four types or 'destinations' which exemplify the trafficking of Brazilian fauna, be it in the national or international market.

Private collectors or illegal zoos are those that most generate funds and, surely incorporate the cruelest form of wildlife trade since they prioritise the most endangered species. Amongst these, are the Golden Lion Tamarin *(Leontopithecus rosalia)* and the Red-tailed Amazon *(Amazona brasiliensis)*, who fetch high prices in the international market.

The chemical and pharmaceutical industry utilises Brazil's fauna in scientific research and for the production of medicines. It is an increasing activity due to frequent illegal incursions of researchers into Brazilian territories in pursuit of new

Red-cowled Cardinal (*Paroaria dominicana*) - Photo: **Vincent Kurt Lo**

substances. The global market for hypertensive drugs alone generates around US$ 500 million per year: one of the active agents is extracted from the venom of the Jararaca pit viper *(Bothrops jararaca)* and sold at US$ 433 per gram. Other Atlantic Forest species, like beetles, frogs, and spiders are also targets of this trade fuelling the international scientific research market.

The sale of animals in pet shops is the activity that most encourages wildlife trade within Brazil, owing to the high popular demand for specimens. The prices depend on species and quantities ordered. The most sought after are the boa constrictors *(Boa constrictor)*, D'Orbigny's sliders *(Trachemys dorbygnyi)*, the Blue-fronted Amazon *(Amazona aestiva)* and the Common Marmoset *(Callithrix jacchus)*.

For smugglers, the animal is only a merchandise and Nature is but a great warehouse. All the animals suffer abuse in the trafficking schemes, such as being drugged, having their corneas burnt, sawing or pulling off teeth and claws, cutting wing feathers, among others treatments. Of every ten animals smuggled, only one survives.

There exist over 180 types of diseases common to both animals and humans. Referred to as zoonoses, some can lead to human deaths or cause serious impairments on health. Children and the elderly are most at risk under the constant contact of wild animals. Some can potentially transmit several illnesses, for example: primates transmit rabies, yellow fever, hepatitis A, tuberculosis; reptiles are carriers of salmonella, worms and fungal infections; birds are vectors of ornithosis and toxoplasmosis, among other zoonoses.

Economically, this clandestine activity is equally devastating. Firstly, because it recruits poor people to work in an illicit activity as a source of alternative income. Secondly, the importance of animals that feed on insects and carry out the biological control of pests that damage harvests is undermined. Moreover, wildlife can be a great attraction for ecotourism. As for the ecological consequences, these are obvious, because when you eliminate a species, all its genetic history dies with it, never to be recovered.

Brazil loses revenue with the wildlife trade since this illegal activity does not generate formal jobs nor taxes. This trade relies on the enticement of disadvantaged communities, who receive a derisory price for the animals they capture, as only the large smugglers accure greater profits. Also there are many health risks that the buyer could submit themselves or their family to, given that sanity controls simply do not exist when dealing with trafficked wildlife. Consequently these become potential vectors of serious illnesses (some even unknown) with serious concerns for public health in Brazil and for the countries that receive wildlife illegally.

The vast expanse and geographical border of Brazil impedes the eficient combating of illegal wildlife trade. The scenario worsens due to the precariousness of human and financial resources, which leads to an impasse: while new species are discovered by science everyday, the wildlife trade becomes more refined in its operations. Environmental issues need to be addressed in an integral manner, having communication and partnership between institutions. Information should be analized, documented and disclosed more effectively by environmental agencies, with aim to expand knowledge, both for environmental entities as for the populace. Besides this, it is necessary to strengthen actions for biodiversity conservation and the repression of environmental crimes.

Although still modest, the results that Brazil has achieved in combating animal trafficking has earned great prominence nationally and with the international community. Among these, we can cite the International Campaign to Combat the Wildlife Trade, launched in 2006 by the Ministry of Foreign Affairs, in conjunction with the Ministry of Environment, and the immuration work that the Ministry of Justice has been conducting through its designated Federal Police division to combat environmental felonies. Moreover, not forgetting the tireless work that the Environmental Police have carried out in their state jurisdictions. In most cases, without support and resources these police officers manage to attain great results and, because of this, are considered the true "Guardians of Wildlife".

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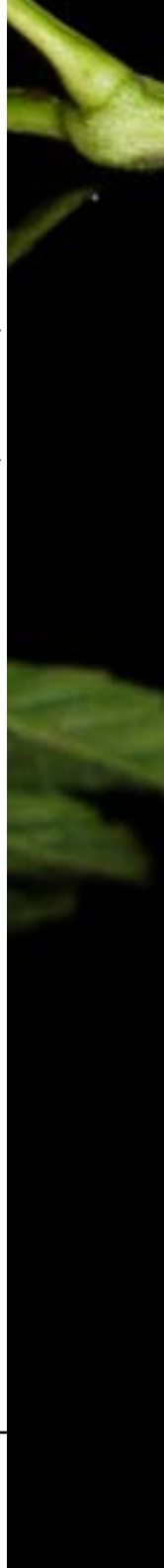
3

CENTRAL CORRIDOR: PROFILES OF MUNICIPALITIES WITH WILDLIFE SMUGGLING OCCURRENCES

Assaults on wildlife, like the harvesting of animals in the wilderness, have not deserved special attention in research and official actions along the Atlantic Forest Ecological Corridor areas. Yet the institutions whose mission is to conserve wildlife do not have data available focussing on municipalities. Thus, the present study uses official documents from the Ministry of Environment, to gather information on poaching and harvesting to try to tie the precarious economic situation of some cities with the misuse of wildlife. However, this was only possible in the states whose areas make up the Central Corridor, as neither detailed studies or data regarding threats to wildlife exist for the regions of the Atlantic Forest Serra do Mar Corridor.



Little Yellow-shouldered bat *(Sturnira lilium)* - Photo: **DG Consultoria**

Introduction

Rogério Rodrigues Ribeiro*

In verifying the objectives postulated by the Amazon and Atlantic Forest Ecological Corridors project of the Ministry of Environment (i.e. reverse the indices of forest fragmentation; biodiversity protection; and the sustainable use of rural areas), we vitness that the harvesting of wildlife by poaching, the selling of byproducts or for supplying the trade, are elements complicating and compromising this desired goal.

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Undoubtedly, the removal of animals from their natural environment is a phenomenon - defined so by its complexity and dynamics – worthy of constant analyses and merits the focus of any project that aims to protect forests. Sadly, this phenomenon has not obtained due prominence in many referred projects and actions, according to findings while researching official documents for this analysis.

To identify some of the factors inducing this activity, a socio-economic and environmental characterization is necessary, as well as a spatial analysis of municipalities involved in wildlife harvesting, poaching, and trafficking. With this purpose, we focussed on the core of the Atlantic Forest Central Ecological Corridor, which spans the State of Espírito Santo and the south of Bahia.

For such, we created a working methodology which consisted, firstly, in the consultation of the following documents: 1) Ecological Corridors project (associated with the Pilot Program for the Protection of Brazilian Tropical Forests – PPG7); 2) "Synthesis of Regional Meetings With the Municipalities of the State of Espírito Santo" (Seama, 2005); and 3) RENCTAS (2001). Secondly, we identified and geographically mapped the focal areas and respective municipal regions engaged in the practice of poaching and wildlife trafficking. Lastly, we gathered additional information concerning the states of Bahia and Espírito Santo, using the IBGE as a primary source.

Economic crises, the destructuring of agriculture, breakup of families, poor education and low distribution of income, are factors that stimulate the harvesting, poaching, and trafficking of wildlife in wilderness areas, to supplement family income of marginalised communities. In this study we intend to verify this fact with an analysis of the various aspects instigating this phenomenon.

Focal Areas of the Central Corridor

Identifying municipalities of the Atlantic Forest Central Corridor marked with the occurrence of poaching and wildlife trafficking activites, was done using data from the "Background Document for the Elaboration of the Operational Guidelines – 2nd Version" (MMA, in press). This document, still unpublished, was created by the Ministry of Environment, in conjunction with collaborating institutions, group facilitation and task force teams. This identification process was complemented by information from another official document: "Synthesis of Regional Meetings With the Municipalities of the State of Espírito Santo" (Seama, 2005).

Through these documents, the Ministry of Environment defined the focal areas and regions in which specific actions shall be developed at reducing or eliminating pressures on biodiversity; as well as actions aimed at establishing connectivity in ecological corridors (MMA, in press). Unfortunately, amongst this roster of actions, we did not find measures addressing the harvesting, poaching, nor the illegal trade of wildlife.

To contemplate the complexity of the work that generated these cited documents, let us briefly explore the methodology developed by the Ministry of Enivronment to select focal areas. The first step was consulting basic documents which flagged areas of interest for biodiversity conservation. These areas of interest were characterized and analized by the document's taskforce team based on information and sources provide by the institutions and researchers involved. This characterization and analysis resulted in a schematic diagram where the information was arranged according to their type, into attributes relating to biodiversity, conservation, administrative, institutional and socio-economic factors. The main threats and opportunities that each area of interest harboured were also analyzed.

From this schematic diagram, and after holding two technical meetings (one in Bahia and another in Espírito Santo), the representatives of the various institutions involved redesigned the areas of interest - from the perspective of the

Ecological Corridors project - and prioritized them, resulting in 11 focal areas, six being in the State of Espírito Santo, four in Bahia and one linking the two states.

Based on all this information, we concentrated our work on focal areas and the respective municipal regions involved with poaching and trafficking wildlife, cross-referencing such data with the information contained in the National Report on Wildlife Traffic (RENCTAS, 2001).

Chalk-browed Mockingbird *(Mimus saturninus)* - Photo: **Vincent Kurt Lo**

FOCAL AREA	MUNICIPALITIES	THREAT
01 BA: CAMAMU CABRUCA CONDURU (*)	Almadina, Aurelino Leal, Barro Preto, Cairú, Camacan, Camamu, Coaraci, Gandu, Ibirapitanga, Igrapiúna, Ilhéus, Itacaré, Itajuípe, Itapé, Ituberá, Jussari, Maraú, Nilo Peçanha, Piraí do Norte, Taperoá, Teolândia, Ubaitaba, Uruçuca, Valença.	Poaching
02 BA: BOA NOVA CONQUISTA COMPLEX (*)	Boa Nova, Poções, Planalto, Barra do Choça, Iguaí, Itambé, Jequié, Encruzilhada, Vitória da Conquista	Trafficking and Subsistence Hunting
03 BA: UNA – HIGHLANDS (BAIXÕES & LONTRAS) (*)	Arataca, Buerarema, Camacan, Canavieiras, Ilhéus, Jussari, Mascote, Pau Brasil, Santa Luzia, Una	Poaching
04 BA: DESCOBRIMENTO (*)	Belmonte, Guaratinga, Itamaraju, Jucuruçu, Porto Seguro, Prado, Santa Cruz Cabrália, Vereda	Trafficking
05 ES: SOORETAMA COMPLEX(*)	Aracruz, Jaguaré, Linhares, São Mateus, Sooretama e Vila Valério	Poaching
06 ES: BURARAMA PACOTUBA CAFUNDÓ (*)	Cachoeiro de Itapemirim e Castelo	Poaching
07 ES: PINDOBAS COMPLEX (*)	Alfredo Chaves, Anchieta, Brejetuba, Cachoeiro do Itapemirim, Castelo, Conceição do Castelo, Domingos Martins, Guarapari, Iúna, Marechal Floriano, Muniz Freire, Vargem Alta e Viana.	Poaching and Illegal harvesting
08 ES: CAPARAÓ Region(**)	Alegre, Irupi, Divino São Lourenço, Ibatiba, Ibitirama, Guaçui, Dores do Rio Preto, São José do Calçado, Iúna, Muniz Freire e Jerônimo Monteiro.	Poaching and Contraband
09 ES: SOUTH Region(**)	Rio Novo do Sul, Cachoeiro de Itapemirim, Atílio Vivácqua, Muqui, Mimoso do Sul, Bom Jesus do Norte, Apiacá e Iconha.	Poaching
10 ES: CENTRAL-NORTH HIGHLANDS Region(**)	Aracruz, João Neiva, Ibiraçu, Fundão, São Roque do Canaã, Santa Teresa, Santa Maria de Jetibá, Santa Leopoldina.	Poaching
BA: Other Municipalities (***)	Itabuna e Itabela.	Vending
ES: Other Municipalities (***)	Afonso Cláudio, Cariacica, Conceição da Barra, Colatina, Pancas, Serra e Vila Velha.	Harvesting and Vending

*Sources: * (MMA, in press) ** (SEAMA, 2005) *** (RENCTAS, 2001)*

Figure 1 – Table containing the focal areas and regions with respective municipalities involved in wildlife poaching and trafficking, drawn up by combining the works of the Ministry of Environment (MMA)(in press), SEAMA (2005) and RENCTAS (2001).

As seen in Figure 1, in the state of Bahia and municipalities of Ilhéus, Jussari and Camacan are part of the focal areas of Camamu and Una (MMA, in press). In Espírito Santo, the city of Aracruz is listed concomitantly in the Focal Areas of the Sooretama Complex and the Central-North Highlands (MMA, in press). The municipality of Cachoeiro de Itapemirim falls under the Burarama Complex, Pindombas Complex (MMA, in press) and the South Region (SEAMA, 2005) Focal Areas.

Based on Figure 1, the focal areas (and their respective municipalities) were geographically mapped, in order to highlight their environmental-socio-economic characteristics and a survey of the likely factors inducing such ilicit environmental practices.

BAHIA

BACKGROUND

In observing the data from the IBGE (1991 and 2000 census) and the indicators presented by the Atlas of Municipal Human Development (PNUD et al., 2006), we can note serious socio-economic problems in this state. Alcoforado (2003) highlights:

a) From the regional development point-of-view:

1. Excessive economic concentration in the RMS – Metropolitan Region of Salvador;
2. Regression in development for the Cocoa producing region of Bahia; and
3. Underdevelopment of the Semi-arid region of Bahia.

b) From the economic point-of-view:

1. Low rates of GDP growth during the 1980s and 1990s; and
2. Declined contribution of Bahia to Brazil's GDP during the 1980s and 1990s.

c) From the social perspective:

1. High rates of unemployment;
2. Poor distribution of income; and
3. Extreme poverty.

Furthermore noting the work of Alcoforado *(op cit.)*, reporting that from 1980 to 1994, Brazil faced serious problems in hyperinflation, worsening its foreign accounts and fall in international funding. From 1994 with the opening of the economy and privatization policies, direct foreign investment grew. With the funds raised from the sale of state-owned enterprises and the reduction of operating costs, the State invested in economic and social infrastructure, but insufficient to meet the demands of Bahia.

According to the MMA (2006), during the latter half of the 19th century, the South and extreme South of Bahia saw the expansion of coffee which bestowed important economic developments for the state. In the 80s, the spread of the 'witches broom' pest caused the fall of cocoa prices in the international market, leading this cocoa-producing region to a major crisis. Contrary to this, was the plantation of vast areas of eucalytpus (monocultures) that supplied the production of paper and pulp. Such expansion brought social and environmental damage, like the curtailment of indigenous and quilombo lands, expulsion of producers and the end of partnerships with smallholders. Other agricultural sector activities also expanded and brought impacts, whether it was extensive livestock farming, or modernization of production standards.

CRISES IN FAMILY FARMING AS AN INDUCER OF POACHING AND WILDLIFE TRADE

Family farming has strong representativeness for the Brazilian economy. According to Vezzali (2006a), about four million small rural proprieties employ 80% of the labour force and produce 60% of the food consumed nationwide.

In Bahia, the rural economy is based mainly on small-scale family agriculture. The share of this to the economy is substantial: 623 thousand household establishments are responsible for 40% of the gross production value, apart from taking up 85% of the workforce employed in agriculture and livestock farming in the state (Demeter, 2005).

By studying the social structure behind the wildlife trade (RENCTAS, 2001), one notes the division in social class involved in this activity into three distinct groups: suppliers, intermediaries and consumers. Suppliers are conceptualised as "the people from the interior of Brazil, humble and poor, without access to education and health, having a very low quality of life. These people, besides hunting for subsistence, discovered in the commerce of wildlife a source of income supplementary to the domestic economy".

Frog spp (*Hylodes phyllodes*) - Photo: **Otavio Marques**

In interviews conducted within the Biological Reserve of Una and adjacent areas in Bahia (CEPF, 2001), 42% of local inhabitants claimed to hunt, and 66% revealed that the animals they hunt have become less abundant in the region. Smallholders hunt more frequently, given that their subsistence needs are greater. Recreational hunting, despite not being practised on a large scale, is also a problem, since it contributes to the extinction of local species.

Alcoforado (2003) associates the low rural average income of the State of Bahia to the land ownership structure being concentrated amongst few landlords. These latter settled on vast extensions of land, and oppose the existence of smallholdings who perpetuate ties of small landowners with rural Bahia. The late insertion of industrial clusters and the existence of medium-sized cities, as well as profits originating from the cocoa business, were insufficient to foster a demand for labour capable of attracting rural populations and provide improved quality of life for workers.

BRIEF SOCIO-ECONOMIC & ENVIRONMENTAL PROFILE OF FOCAL AREAS IN BAHIA INVOLVED IN WILDLIFE POACHING AND TRAFFICKING

As seen in Figure 1, there are four areas in Bahia that present threats to biodiversity through poaching and wildlife trafficking: the Boa Nova Complex, Camamu, the Una highlands and Descobrimento. These four focal areas are mapped in Figure 2.

With the intent to trace a brief socio-economic and environmental profile of these areas, we used data from the IBGE (2000), MMA (in press) and the Atlas of Municipal Human Development (PNUD et al., 2006), such as the Human Development Index (HDI – which combines life expectancy, income and levels of education) and economic activity.

- **Boa Nova Complex – Conquest**

According to the MMA (in press), in this focal area real-estate prospecting, unemployment, recent clearing of vegetation cover in small areas located on elevated ground,

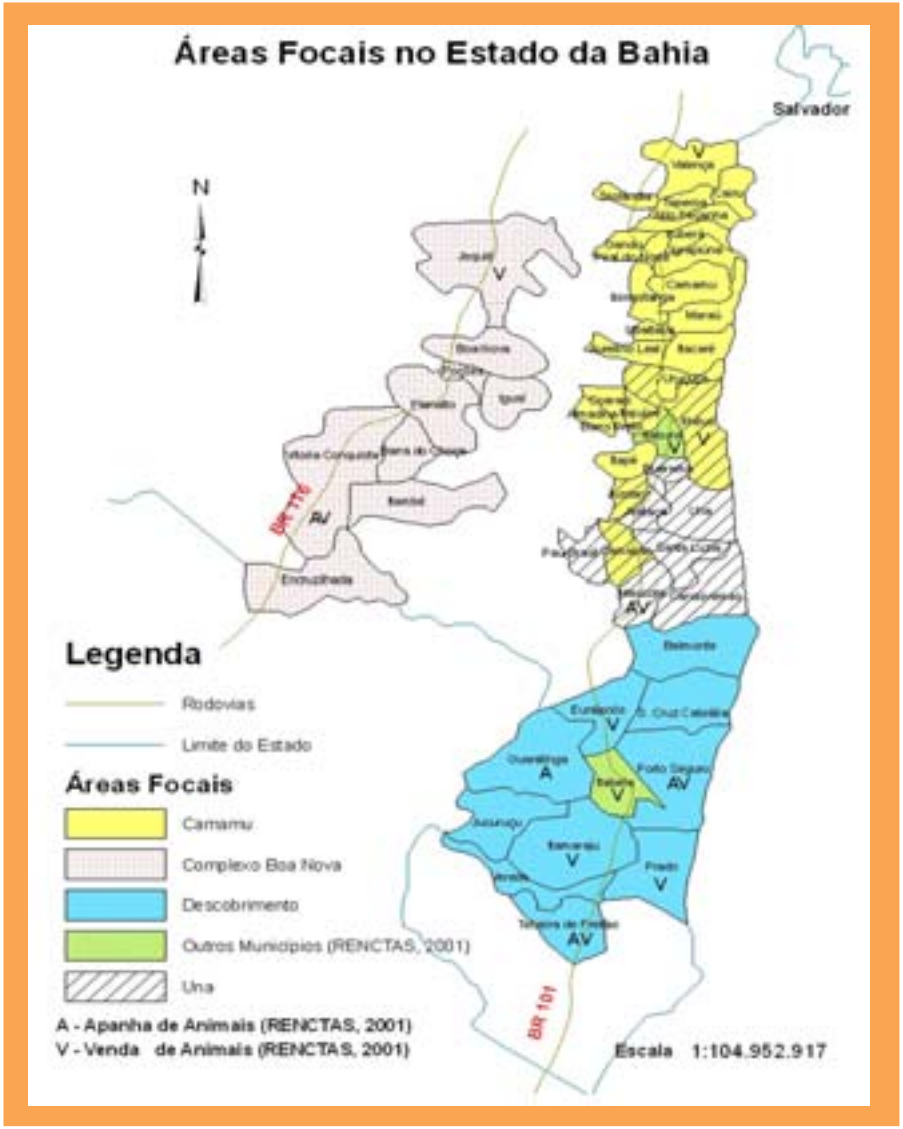

Figure 2 – Focal areas and their respective municipalities containing threats from poaching and/or wildlife trafficking, in the state of Bahia. Map created by the author. Sources: MMA (in press) and RENCTAS (2001).

threatening the more intact areas of forest, occur among other threats. This deals with one of the poorest regions of Bahia. As for economic activities, there is a predominance of agribusiness with productions in coffee, cocoa, grains and livestock.

The focal area is embedded in a region with a climate ranging from sub-humid to semi-arid, being very vulnerable to wildfires, that contribute to the devastation of vegetation cover on site.

It possesses low HDI indices, with municipalities showing the worst indices (0.521 to 0.613) being: Encruzilhada, Itambé, Barra do Choça, Planalto and Boa Nova. Improved quality of life is tied to higher indices, as shown by the municipalities of Vitória da Conquista and Jequié (HDI 0.660 - 0.805). Here education is markedly present, given the lowest percentage of adults (persons of 25 years or older) with less than four years of schooling (HDI 19.30 to 59.70%).

For this focal area, the MMA (in press) reports that the existence of wildlife trafficking and subsistence hunting by low-income populations takes place. RENCTAS (2001) indicates that vending occurs in the munipality of Jequié, and that harvesting and vending exists in Vitória da Conquista.

- **Camamu – Cabruco – Conduru**

According to the MMA (in press), in this focal area it is possible to witness activities like: fishing, burning, deforestation due to real-estate speculation, illegal logging inside conservation units, expansion of livestock pastures, high rural unemployment, expansion of tourism development projects, among other threats. As for the major agricultural activities, one finds cocoa, rubber extraction, grains and low-intensity pasture.

In mapping the quality of life for municipalities within the focal area we witness that the worst indices for development befall municipalities like Aurelino Leal, Nilo Peçanha and Itacaré (HDI 0.521 to 0.592), as opposed to the municipalities of

Ilhéus, Itabuna (RENCTAS, 2001) and Valença, with better quality of life (HDI 0.660 to 0.805). Aurelino Leal, Ibirapitanga, Maraú, Teolândia and Igrapiúna have between 74.86 to 87.40% of adults (persons of 25 years or more) with less than four years of schooling.

The MMA (in press) reports the existence of hunting of wild animals in this focal area. RENCTAS (2001) indicates the existence of vending of wildlife only in the municipalities of Valença, Ilhéus and Itabuna.

- **Una-Higlands (Baixões e Lontras)**

In this focal area what takes place is real-estate speculation, a lack of community cooperation, unemployment, replacing the traditional cocoa crop (cabruca) for other crops, expansion of pastures, slash-burning, creation of new allotments, presence of squatters, tourism, weak environmental enforcement, among others (MMA, in press).

Most municipalities have as a major economic activity the cultivation of cocoa. With less prominence are the coffee, rubber and coconut crops.

The quality of life is lower in the municipalities of Arataca, Santa Luzia, Mascote and Una (HDI 0.521 to 0.613), compared to Ilhéus and Itabuna (HDI 0.660-0.805). Arataca and Una hold the worst schooling for the area with 70.47 to 87.40% of adults (persons of 25 years or more) with up to four years of study (IBGE, 2000). The cities of Camacan, Jussari and Ilhéus are also municipalities members of the Camamu Focal Area (MMA, in press).

This focal area has problems with the poaching of wildlife (MMA, in press). There are occurrences of selling activities in the municipality of Ilhéus, and harvesting and vending in Mascote (RENCTAS, 2001).

- **Descobrimento**

In this focal area, you can witness the occurrence of animal

and plant trafficking. Threats include; eucalyptus monocultures which cause an exodus of smaller farmers towards the periphery of urban centers (promoting the rise in poverty and fewer income options within rural zones), lack of enforcement, destruction and invasion of forest, mangrove and restinga areas (due to unplanned urbanization and mass tourism), land reform settlements in remnant areas, wild fires, livestock, and exploration of mineral ores. Besides monocultures and pulp companies, in various municipalities the agriculture contributes with coffee, papaya, coconut, rubber crops, and high rates of pasture occupancy (MMA, in press).

In the municipality of Porto Seguro, the expansion of eucalyptus monocultures pressures the surrounding areas of the Monte Pascoal ,and the Pau-Brasil National Parks, which also suffer from many fires (Santos *et al.*, 2004).

A good part of the municipalities of this focal area have human developments indices between 0.660-0.805. The municipalities with least development are Guaratinga, Vereda, and Jucuruçu (HDI – 0.521 to 0.613). They also present the worst percentages in education, varying between 74.86 and 87.40% of adults (persons of 25 years or more) with up to four years of schooling (IBGE, 2000). Among the municipalities with higher HDI are Eunápolis, Santa Cruz Cabrália, Porto Seguro, Itamaraju, Prado, and Teixeira de Freitas.

Beyond the threats of trafficking wild animals and plants (MMA, in press), RENCTAS (2001) indicates the existence of harvesting activities in the munipality of Guaratinga; vending in the municipalities of Eunápolis, Itamaraju, Prado, and Itabela; in addition to the harvesting and vending which takes place in Porto Seguro and Teixeira de Freitas.

As for the highways, these are important tools utilized in the wildlife trade. The highway BR 116, which transects the Boa Nova Complex focal area, is a prime route for agricultural produce (GEIPOT, 1997). Heavily transitted by truckers who reach metropolitan regions like Belo Horizonte, Rio de Janeiro,

Cicadas - Photo: **André Camilli Dias**

São Paulo, among other cities. According to RENCTAS (2001), 95% of wildlife trade in Bahia make use of highways and 100% in the State of Espírito Santo. Another important highway transversing the focal areas of Camamu, the Una-Highlands, and Descobrimento, is the BR 101, which cuts through Bahia and links this State with other important economic centers. The inauguration of the BR-101 federal highway in 1973, greatly contributed to intensifying the devastation in the south of Bahia (CEPF, 2001).

ESPIRITO SANTO

BACKGROUND

According to SEP (2006), the State of Espírito Santo went through two distinct but important economic cycles, i.e.:

1 - The Coffee cycle.

Coffee arrived in the capixaba region (state of Espírito Santo) around the 1880s, originating from the Baixada Fluminense (state of Rio de Janeiro). At the end of the 50s, 75% of rural businesses in Espírito Santo had coffee as a main cash crop and contributed directly to circa one third of the revenue generated in the State (over 40% of its tax revenue). The recurring crises of price drops in coffee made income fall for much of the population. The production model used by family smallholders who occupied the hinterlands of the state, hindered the subsititution of crop cultures due to their dependance for sustenance.

2 - The Cycle of Industrialization.

The cycle of economic diversification came via industrial pathways in the early 60s until the mid-80s. When coffee plantations (predominantly for export and centered on small-scale coffee production) suffered sharp reductions in their economic significance for the state (through an eradication program of clearing less productive coffee plantations), the economy of Espírito Santo moved rapidly to a secondary specialization - an exporter focussed on large-scale industrial commodities, with production leaving via

the Porto de Tubarão. The creation of the shipping port Porto de Tubarão, in Vitória, can be seen as a "watershed moment" for this cycle. A similiar event is when the iron ore pelletizing plant of the Companhia Vale do Rio Doce (CVRD) is built.

From 1975 onwards, industrial expansion was fostered by massive state and foreign capital. This stage was marked by the setup and expansion of so-called "mega projects" – large industrial facilities focussed in the production of intermediate goods (commodities). Among the sectors that increased their participation in the manufacturing industry were the: (I) the paper and pulp sector (Aracruz Celulose S.A.), in 1979; (II) the mining sector (CVRD); and (III) the metallurgy sector (Companhia Siderúrgica de Tubarão - CST), in late 1983. In the 90s, petroleum gave new impetus to the industrialization cycle by installing onshore and offshore drilling fields. In the rural area one witnessed the implementation of agro-industries and the diversification of agriculture. The urban population begins to prevail in the face of a mass rural migration.

CURRENT SCENARIO

In a more recent context (1990 to 2003), Espírito Santo is going through a process of privatization of large companies and port facilities under a policy of economic liberalization incentives for exports (Campos, 2004).

In the environmental and social domains some relevant issues have been observed. Spizlman, (1998) informs that in Espírito Santo, from 1990 to 1995, approximately 22,428 hectares or 5.47% of the Atlantic Forest were felled. The problem is that most of the remnants are found in private properties and the state conservation units are too small to preserve the region's imense biodiverity.

Not unlike what is already seen in the State of Bahia, agriculture suffers serious problems, especially family farming. The SEAG (2005) points out that the major issues faced by family farmers are: inadequate public policies, bad weather, degradation of

of the natural resource base of productive units, little diversification of agricultural activities, lack of technology, less varieties of food staples, low productivity and lack of market competitiveness. As social consequences, one witnesses impoverishment, emigration (particularly of youth and women) and risks to food security both in the countryside as with cities.

Here again the eucalyptus monocultures (early 80s) caused problems. In the far north of the State it already caused the curtailment of indigenous and quilombo lands, the expulsion of small farmers and the partnerships with smallholders (MMA, in press). Such partnerships are starting to jeopardize the protection of the Atlantic Forest situated inside private properties. Oliveira *et al*. (2006), in studying the performance of companies fostering silviculture, noted that forestry can make up to 46% of household income for landowners. For some producers, this became their prime activity relegating agriculture to second place. Silviculture has allowed capital to be reinvested on the family property: in crops, machinery, equipment, refurbishment of warehouses, debt, entertainment, and even on their childrens' schooling. Many landowners affirm in interviews, that they cease to invest in silviculture due to the lack of available land, through ignorance and the lack of contact with start-up capital agencies.

With regards to the wildlife trade in the State of Espírito Santo, 100 % occurs through the use of highways. Yet poaching is highly selective; practiced in small and very fragmented zones, which represents a serious threat to the small animal populations (CEPF, 2001).

BRIEF SOCIO-ECONOMIC & ENVIRONMENTAL PROFILE OF FOCAL AREAS AND REGIONS OF ESPÍRITO SANTO INVOLVED IN WILDLIFE POACHING AND TRAFFICKING

The focal areas and regions defined for the State of Espírito Santo are: the Sooretama Complex, Burarama-Pacotuba-Cafundó, the Pindombas Complex, the Caparaó Region,

the South Region, and the North-Highlands Region. These focal areas and Regions are mapped in Figure 3.

Below, a characterization of the focal areas and regions involved with poaching and trafficking of wildlife.

- **Sooretama Complex**

According to the MMA (in press), in this focal area occurs; the aggressive advance of cattle ranching, agriculture and eucalyptus plantations, high rates of animals being run over in the BR 101, slash-burnings and forest fires, unplanned tourism, low effectiveness of conservation units, among other threats to biodiversity. As economic activities, vast plantations are featured of eucalyptus (Aracruz and São Mateus), coffee (all municipalities), cacao (Linhares), rubber trees (most municipalities), fruticulture (papaya and passionfruit) and intensive pasture. The area contributes with approximately 9.1% of State GDP (SEP, 2006).

The municipalities of Conceição da Barra, Sooretama, Vila Valério and Jaguaré have the lowest HDI (0.659 to 0.719), reflecting the poor indicators for education, low per capita income and the irregular distribution of revenue. The municipalities of Aracruz and Linhares, featuring many pulp companies and eucalyptus monocultures showed the best HDI (0.739 to 0.856), supported by the best per capita income and educational level. However, income is stronly concentrated in these areas and drops substantially beyond these centers. This focal area is cut by the BR 101, representing the primary route of trafficking.

The MMA (in press) identified the threat of poaching for biodiversity in this focal area. RENCTAS (2001) indicates the existence of harvesting activities in the municipalities of Conceição da Barra, and harvesting and vending in São Mateus, Sooretama, and Linhares.

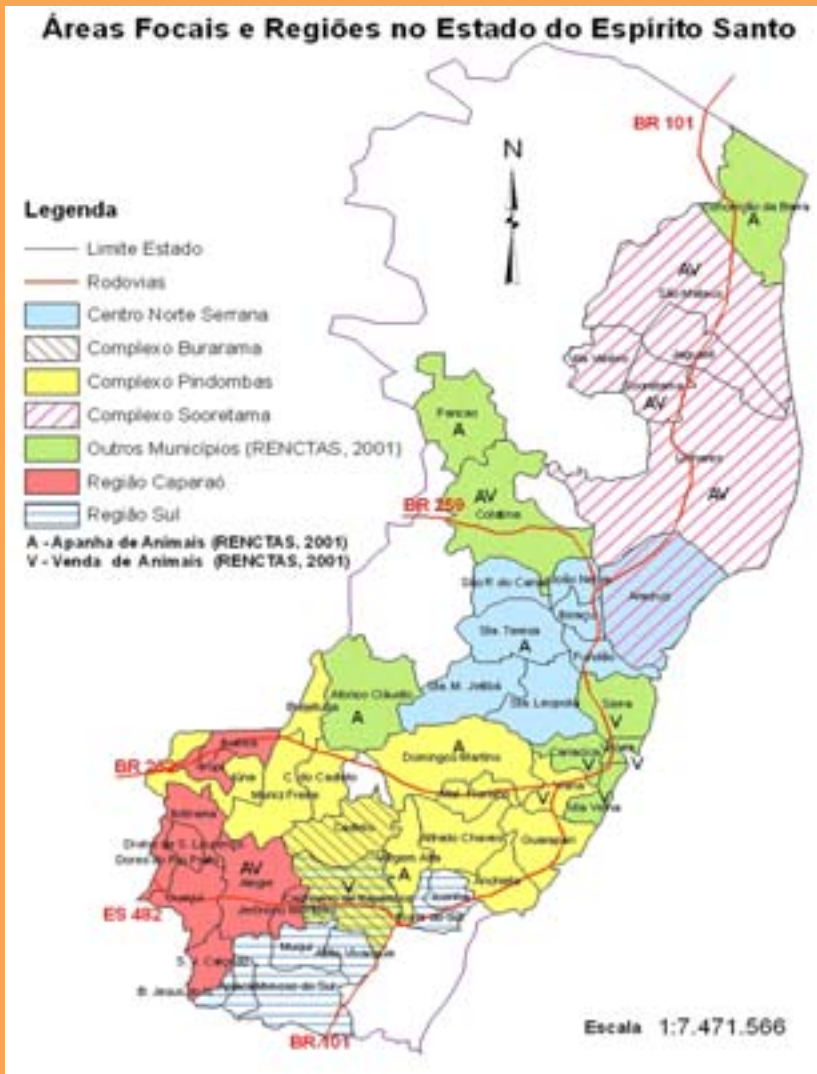

Figure 3 – Focal Areas and Regions with their respective municipalities containing the threats of poaching and/or trafficking of wild animals, in the state of Espírito Santo. Map elaborated by autor. Sources: MMA (in press), RENCTAS (2001) and SEAMA (2005).

• Burarama-Pacotuba-Cafundó

Among the threats to biodiversity in this focal area, the MMA (in press) adds to the list, fires, removal of timber and the lack of technical assistance for rural development. There is a predominance of coffee, pineapple, avocado, and palm-heart plantations, and the heavy occupation of pastures.

The municipalities of Castelo and Cachoeiro de Itapemirim possess good development indices (HDI - 0.762 to 0.856), with good per capita incomes and education. The poor distribution of wealth is also present in these cities. Cachoeiro de Itapemirim could be considered a regional center (SEP, 2006), for possessing strong links with various municipalities and other states. Through its territory pass two main highways: the BR 101 and the ES 482.

• Pindombas Complex

According to the MMA (in press), ones notes in this area, among other threats to biodiversity, poaching and the illegal extraction of fauna, aggressive real-estate speculation, lack of land and agricultural policies, lack of professional training (agricultural,

artisan and tourism) and the low profitability of crops.

The cities of Afonso Cláudio, Brejetuba, Muniz Freire and Conceição do Castelo presented the lowest HDI (0.659 to 0.738) of the area, in the face of problems such as education, low per capita income, and poor income distribution. The municipalities of Castelo [member of the Burarama Focal Area (MMA, in press)], Cachoeiro de Itapemirim [Burarama Focal Area (MMA, in press) and South Region (Seama, 2005)], Guarapari, Cariacica, Vitória, Vila Velha and Anchieta, had good HDI (0.762 to 0.856). Regarding this latter, it is also a regional center (SEP, 2006), with strong links with other municipalities and states.

As for the wildlife trade, RENCTAS (2001) identified harvesting activities in the cities of Afonso Cláudio, Domingos Martins and Vargem Alta; vending in the municipalities of Serra, Cachoeiro de Itapemirim, Cariacica, Vitória, Vila Velha and Viana. Within the territory of this latter city, pass the BR 101 and BR 262 highways which cut through the present focal area, besides interlinking it to other metropolitan regions like Belo Horizonte, Rio de Janeiro and São Paulo.

- **Caparaó Region**

Accoring to SEAMA (2005), the most significant threats to biodiversity in this region are: deforestation, the destruction of springs and valleyside forests, coffee and eucalyptus monoultures, uncontrolled burning, indiscriminate use of pesticides, inadequate management of livestock, difficulty of access to credit, and the lack of planning directed at the utilising natural resources.

The municipalities of Ibitirama, Irupi, Divino de São Lourenço and Jerônimo Monteiro are the ones possessing low indicators for education and per capita income, mirrored by their HDI (0.659 to 0.719) - contrary to the municipalities of São José do Calçado, Guaçuí and Alegre, with HDI varying between 0.739 to 0.761. This last city has one of the highest rates of illiteracy in the region.

Threats to biodiversity in this Region comes through the hunt and contraband of wildlife as stated by the MMA (in press). It was identified in the municipal of Alegre the harvesting and vending of animals (RENCTAS, 2001).

• South Region

The main threats to biodiversity in this region are: poaching, existence of monocultures, lack of professionals in environmental education, lack of incentives to create private reserves (RPPNs), vast extensions of pasture - causing soil exhaustion -, fragmentation of natural ecosystems, indiscriminate use of pesticides and industries located at the limits of permenant reserve areas (SEAMA, 2005).

The region is one that presents a better balance in the human development indices, especially Bom Jesus do Norte, Cachoeiro do Itapemirim (member of the Pindombas Complex and the Burarama Complex Areas (MMA, in press) and Iconha (HDI 0.762 to 0.856). Some lower per capita income values and land tenure issues can be found mainly in the municipalities of Apiacá, Mimoso do Sul and Atílio Vivácqua.

Beside poaching in this Region, there was only found to be vending in the city of Cachoeiro de Itapemirim (RENCTAS, 2001).

• Central-North Highlands Region

The main threats towards biodiversity in this region are made up of poaching, the increase in family size and division of rural alotments, deforestation, the squandering of the potential of native species, and the lack of incentive to create RPPNs (SEAMA, 2005).

The best quality of life in the region can be observed in the municipalities of Ibiraçu, Aracruz (also member of the Sooretama Complex – MMA, in press), João Neiva, Santa Teresa and Colatina (HDI 0.762 to 0.856). This last city is also considered a regional center (SEP, 2006), for possessing strong links with the various municipalities and other states. Suffering more issues, are the cities of Santa Maria de Jetibá and Santa Leopoldina given their lower indices of education and per capita income.

In the cities of Pancas and Santa Teresa the harvesting of animals takes place, and in the city of Colatina occurs harvesting and vending (RENCTAS, 2001). As highways support wildlife trafficking, the BR 101 stands out for passing the territory of the municipalities of João Neiva, Ibiraçu and Fundão; likewise the BR 259, which runs through the municipality of Colatina until the State of Minas Gerais.

SUMMARY OF MUNICIPALITIES OF BAHIA AND OF ESPÍRITO SANTO

Despite the draft documents used for this article (MMA, in press and SEAMA, 2005) indicating the occurrence of poaching and trafficking of animals in the focal areas and regions studied for Bahia and Espírito Santo, the documents do not clarify if these threats to biodiversity occur without exception in all municipalities. Nor do they also detail, for the municipalites involved, which activity (harvesting or vending) is most harmful to their territory's fauna.

Based on the municipalities and the activities cited in the work published by RENCTAS (2001), and complemented with the information about the existence of smuggling routes, low education, human development indices (for the Federal State) summary tables were elaborated by state (Figures 4 and 5), in an attempt to identify possible correlations between these data.

Municipalities BA RENCTAS (2001)	Activity	Smuggling Route	HDI (High) (0.636-0.805)	HDI (Medium) (0.614-0.635)	HDI (Low) (0.521-0.613)	Education (Low)
Guaratinga	Harvest				*	*
Subtotal - 1					1	1
Jequié	Vending		*	*		
Valença			*	*		
Ilhéus			*	*		
Itabuna			*	*		
Eunápolis			*	*		
Prado				*		
Itamaraju			*	*		
Subtotal - 7			6	7		
Vitória da Conquista	Harvesting and Vending		*	*		
Mascote			*		*	*
Porto Seguro				*		
Teixeira de Freitas			*	*		
Subtotal - 4			3	3	1	1
Total - 12			9	10	2	2

Figure 4: summary table containing the municipalities of the state of Bahia involved in wildlife trade (RENCTAS, 2001) and their occurrences by activity, smuggling route, Human Development Index (HDI-2000) and occurence of low education (2000). Org. by author.

Municipalities ES RENCTAS (2001)	Activity	Smuggling Route	HDI (High) (0.739-0.856)	HDI (Medium) (0.720-0.738)	HDI (Low) (0.659-0.719)	Education (Low)
Conceição da Barra	Harvest	*			*	*
Pancas				*	*	*
Domingos Martins		*		*		
Vargem Alta		*				
Afonso Cláudio					*	*
Santa Teresa			*			
Subtotal - 6		3	1	2	3	3
Cachoeiro de Itapemirim	Vending	*	*			
Serra		*	*			
Vitória		*	*			
Vila Velha		*	*			
Cariacica		*	*			
Viana		*		*		
Subtotal - 6		6	5	1		
São Mateus	Harvesting and Vending	*		*		
Sooretama		*			*	*
Linhares		*	*			
Colatina		*	*			
Alegre		*	*			*
Subtotal - 5		5	3	1	1	2
Total - 17		14	9	4	4	5

Figure 5: summary table containing the municipalities of the state of Espírito Santo involved in wildlife trade (RENCTAS, 2001) and their occurrences by activity, smuggling route, Human Development Index (HDI-2000) and occurence of low education (2000). Org. by author.

In analysing Figures 4 and 5, one finds:

a) that only seven municipalities carry out the activity of harvesting animals. Of these, four show low quality of life and education scores, with the exception of three municipalities in Espírito Santo: Santa Teresa, Domingos Martins and Vargem Alta, which showed medium and high HDI. Only three municipalities have their territory cut by highways considered routes for smuggling animals;

b) that thirteen municipalities engage in the activity of vending wildlife. Twelve cities that possess the best indices for quality of life in comparison to their state of origin, are on the wildlife trade route;

c) that nine municipalities exercise the activities of harvesting and vending of animals. Eight of these are in the smuggling route and seven cities have medium and high HDI. Only two municipalities have low quality of life (Mascote (BA) and Sooretama (ES)). As for the low indices in education, beyond these last two municipalities, the city of Alegre (ES) is also included.

FINAL REMARKS

Through this study it can be affirmed that not all the municipalities of the Atlantic Forest Central Corridor with low human development indices are places where the harvesting of animals occurs, just as not all cities that enjoy better quality of life (or that are transversed by highways considered smuggling routes) engage in the vending wildlife. However, the poor quality of life, associated with poor education, empowers the practise of wildlife trafficking. Such that the illegal trade can find as potential vending sites the cities with best quality of life and serviced by important roads and highways.

The documents of the MMA (in press), and of SEAMA (2005), among other official documents, can not map nor correctly address the phenomenon of animal trafficking in various projects and planned actions. A better study of the social classes involved in these activities is missing, as well as an integration of databases from environmental agencies responsible

for the licensing and overview of activities potentially degrading to the environment.

The harvesting of wild animals in the wilderness, poaching, and trafficking would be attractive activities for populations who see their sources of income and survival being reduced due to the so-cio-economic crises that affect the areas where they live. These include; breakup of family agriculture - especially because of the expansion of monocultures; family disruption caused by migration; and the bad distribution of income. Combined with precarious environmental education, when not inexistent, has enabled the emergence of several generations of deprived people, who are discouraged and possess little discernment in making favourable decisions towards the protection of our biodiversity. These factors further induce the removal of wildlife from their *habitats*, when coupled to the ease of access to buyers propitiated by the inauguration of vast highways.

The elaboration of this theme was only possible with the provision of valuable information and data collected from work off the Ministry of Environment (MMA, in press) and SEAMA (2005), developed for the Central Corridor. Thus, for understanding the socio-economic and environmental profiles of the municipalities encompassing the Ecological Corridor of Serra do Mar, the continuing of these pertinent surveys for data and information will be necessary, alongside the States members of this ecological corridor, which are, Rio de Janeiro, Minas Gerais and São Paulo.

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Gray four-eyed opossum *(Philander opossum)* - Photo: **André Camilli Dias**

4

TABLES, GRAPHS, ANALYSES

From the questionnaires answered by the precincts of the Environmental Police and the superintendencies of IBAMA, a processing of the data was undertaken, with exhaustive analysis for all responses. This work resulted in tables and graphs, presented herein, as with the comments that depict broadly the problem of removing wildlife from nature, the complex work of combating this crime, and the issues and shortcomings to be remedied. Further information is available through the Diagnosis project website.

Geoffroy's Marmoset *(Callithrix geoffroyi)* - Photo: **André Camilli Dias**

Gaps in information mirror the reality of enforcement

STATE	BODY	Nº Infract*	Nº ANIMALS SEIZED*	SPECIES **	ARREST LOCATIONS	
BA	IBAMA	110	3,482	Yes Nc/Ns	Yes	
BA	Coppa	X	X	Yes Nc	Yes	
ES	IBAMA	225	X	X	Yes	
ES	E.P.	171	6,434	Yes Nc	Yes	
RJ	IBAMA	X	X	X	X	
RJ	E.P.	114	3,549	Yes Nc/Ns	Yes	
MG	IBAMA	X	X	X	X	
MG	E.P.	2.740	21,529	Yes Nc/Ns	Yes	
SP	IBAMA	185	2,691	X	Yes	
SP	E.P.	746	25,111	Birds Nc/Ns	Yes	
IBAMA	National	X	X	X	X	

The table 'Highlights from the Questionnaires Answered by the Environmental Police and IBAMA' shows a partial picture of the performance of enforcement agencies in the five states studied.

QUESTIONNAIRES USED ON THE ENVIRONMENTAL POLICE AND IBAMA

	Destination Animals (%) R / Ce / Z / Br***	Nº of Deaths	Smuggling Routes	Sites Capture	Sites Vending	Main Routes	Structure	Difficulties
	25 / 75 / 0 / 0	22%	Yes	X	Yes	Yes	Yes	Yes, partial
	24 / 72 / 4 / 0	1%	X	Yes	Yes	X	Yes	Yes, cited all
	"Ce Majority"	X	X	X	X	Yes	Yes	Yes, less governament support
	10 / 90 / 0 / 0	2%	Yes	Yes	Yes	Yes	Yes	Yes, less gov. support and integration
	X	X	X	X	X	X	X	X
	10 / 85 / 5 / 0	X	Yes	Yes	Yes	Yes	Yes	Yes, less integration; Cetas
	X	X	X	X	X	X	X	X
	24.37 / 26.4 / 13.85 / 8.38	10.31%	Yes	Yes	Yes	Yes	Yes	Yes, cited all
	20 / 8 / 2 / 70	5%	Yes	Yes, generic	X	X	Yes	X
	18.3 / 27.8 /17.3 / 11.5	0.51%	Yes	Yes, only one site	Yes	Yes	Yes	Yes
	X	X	X	X	X	X	X	X

Source: Renctas Questionnaires.

*The data on infractions and animals seized refer only to the year of 2005.

** Nc = common name; Ns = Scientific name.

*** R = Releases; Ce = Cetas; Z = Zoo; Br = Breeder.

NB - 100 % of Environmental Police replied to the questionnaire; of the Superintendencies of IBAMA, 60 % replied.

The letter X refers to non-disclosed data.

A detailed look at the table

Campo Troupial *(Icterus jamacaii)* - Photo: **Vincent Kurt Lo**

The IBAMA units of Rio de Janeiro and of Minas Gerais did not reply to the questionnaire. The IBAMA Headquarters, located in Brasília, was the first to be consulted, but claimed to a lack of information, which lead RENCTAS to forward the questionnaires to the different State superintendencies.

For the preparation of the table we considered only data from the year 2005. The answers regarding sites of capture, vending and main smuggling routes were inserted into a geo-referenced map in the site www.diagnostico.org.br (see page 86).

The questions contained in the questionnaire and used in the elaboration of the table were the following:

Number of Infractions

1. How many infractions involving wild animals (harvesting, transport, commerce, illegal storage or possession) were issued in **2005***?*

One notes a large difference among the numbers, or the lack of information (110 to 2740 infractions emitted in 2005).

Number of Animals Seized

2. How many wild animals were seized in the year **2005***?*

The large difference in numbers is again repeated, varying from 2681 to 25,111.

Most Seized Species

3. Most seized Mammals / Birds / Reptiles

Great difficulty in identifying animals seized was noticed, given that in some cases only the common names were mentioned without the corresponding scientific nomenclature. This compromises a more precise analysis of the status of species most victim of trafficking, since the common names of the same species vary by region.

Sites of Arrest

4. Cite, in order of importance, the main sites of arrest for wild animals within the State: (fairs, roads, irregular depots, households, shops, etc.).

All replied.

Destination of the Animals

5. Where are the animals seized by you allocated to? (release, deposits in zoos, and others). NB: write the approximate percentage in the table below.

A lack of standardization is noticed in the allocation criteria of the animals seized, hence, the largest percentage are forwarded to CETAS, or towards breeders.

Number of Deaths

6. On average, how many animals die between their seizure until their final destination? Reply in percentage (%).

In this item, the difference is immense, varying from 0.51% to 22% throughout the different states and agencies. Within the same state, the number varies from 0.51% to 5%, depending on the regulatory agency - as is the case in São Paulo. Not everyone provided information.

Smuggling Routes

7. State as a percentage (%) which are the outlet routes most utilised for the trafficking of animals in your area of remit?

All replied, stating what is clearly known: that the near majority of wildlife trafficked internally (around 90%) is smuggled through highways. Shipping vessels and airplanes are also used.

Sites of Capture

8. Cite the 10 most important capture sites of wildlife in your area of remit. NB: if this situation does not occur in your region, leave blank, or put in only the data available.

This response was greatly compromised, considering that the majority of states did not provide a clear picture of this question, with exception of the State of Minas Gerais, which replied with an exquisite level of detail.

Vending Sites

9. Cite the 10 most important illegal vending sites of wildlife in your area of remit. NB: if this situation does not occur in your region, leave blank, or put in only the data available.

Once again, answers were incomplete, with the exception of the State of Minas Gerais, who provided in detail the vending sites of wild animals hailing from trafficking.

Main Routes

10. Cite the main wildlife trade routes in your region.

Another item which had little response and which also compromised the fight against the wildlife trade. To direct and intensify inspections, it is necessary to know in detail the wildlife trade routes.

Tarantula spp - Photo: **DG Consultoria**

Agency Structure

11. Information about your institution.

All replied, but some rather precariously passed imprecise information (ex: "more or less 15 vehicles") or demonstrated ignorant of the actual number of agents employed in their institutions.

Difficulties

12. Mark with an X the main difficulties in combating the wild-life trade in your area of remit:

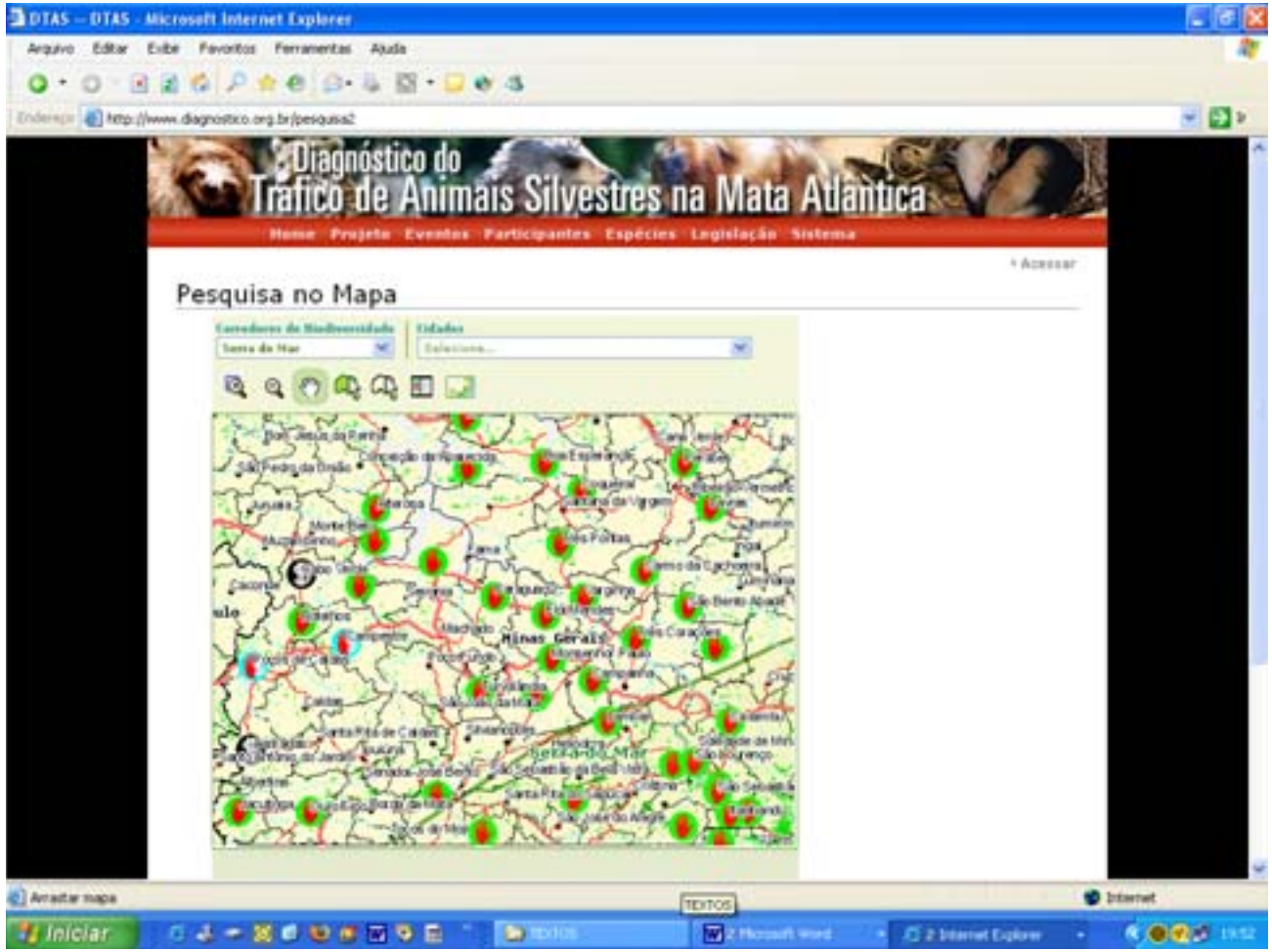
( ) Insufficient staff.
( ) Insufficient vehicles.
( ) Lack of adequate training.
( ) Lack of equipment.
( ) Lack of research material.
( ) Lack of government support.
( ) Lack of integration with other public organizations.
( ) Lack of places to send seized animals.
( ) Barriers in the legislation.
*( ) Other, quote:*_____

This question reveals some serious structural problems in most agencies, which are lacking in personnel, vehicles, equipment, training etc. Almost all mentioned the lack of places to forward animals to, which makes the job of repressing the wildlife trade more complicated. Besides this, one notes a certain incoherence in some answers, since some agencies quote a lack in practically everything, but do not then proceed to mark the option 'lack of government support'.

Red-browed Amazon *(Amazona rhodocorytha)* - Photo: **André Camilli Dias**

Interacting with the website

Some enforcement agencies provided detailed information about the sites of harvesting, vending, and the main wildlife trade routes in their respective states. These data are available in the map of the website *www.diagnostico.org.br*, as shown in the figure opposite. By interacting with the map it is possible to retrieve such information at the municipal-level by clicking on the desired area. The greatest detail is found in the region of Minas Gerais, thanks to the information disclosed by the Environmental Police of that State, when filling the questionnaire.



Site classification according to the type of trafficking occurrence

- HARVEST AND VENDING
- HARVEST
- VENDING
- Wildlife trade Route

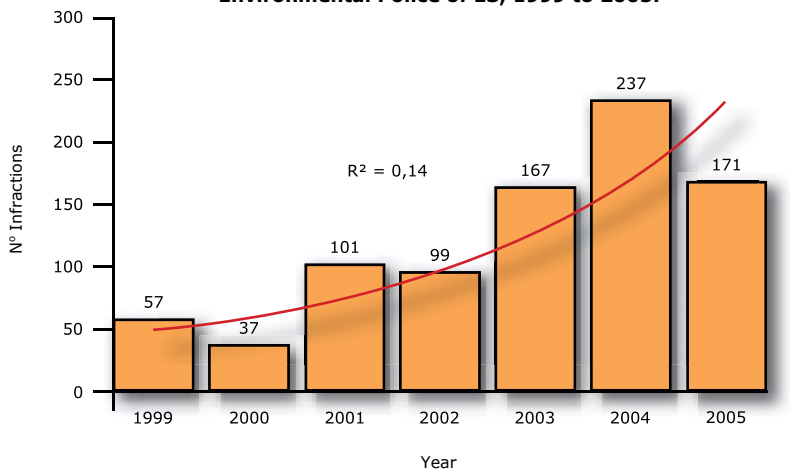
Toco toucan *(Ramphastos toco)* - Photo: **André Camilli Dias**

Numbers, indices, indicators, filled with divergences.

The data provided by the Environmental Police and IBAMA for the five States generated the graphs that follow. The fact that some institutions did not reply to the questionnaires, or did not have complete information, compromised undertaking more in-depth analyses, meaning the graphs also depict these flaws. Also it was not possible to take a closer look at the removal of animals and their illegal trade in the municipalities that make up the Atlantic Forest Central and Serra do Mar corridors.

Infractions involving wildlife

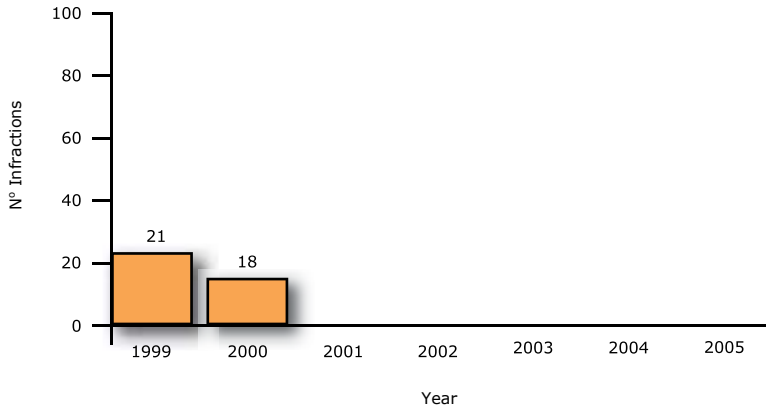
Graph 1 - Number of infractions issued by the Environmental Police of ES, 1999 to 2005.



Source: Environmental Military Police Battalion of the State of Espírito Santo

The number of infractions involving fauna, issued by the Environmental Police of the State of Espírito Santo, shows an upward trend in the graph above. In the first two years of the series, there was a decrease, showing an almost three-fold increase in the following year, and remained stable for over one year. In 2003, there was an 1.67 times increase compared to the previous, to then increase another 1.41 times in the following year. In 2005, the issuing of infractions returned back to those levels of 2003.

Graph 2 - Number of infractions issued by the Environmental Police of BA, 1999 to 2005.

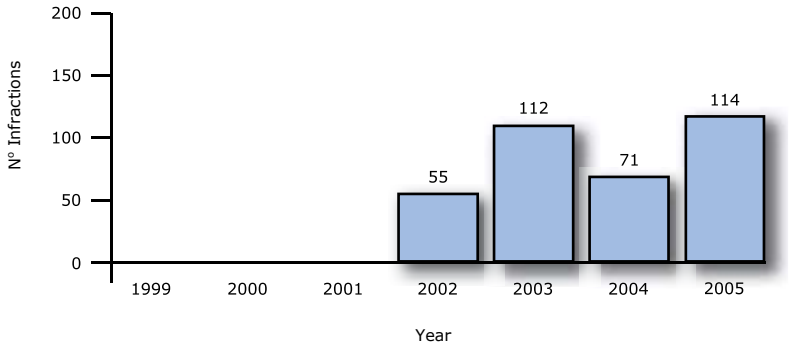


Source: Environmental Police Company of the State of Bahia

The data provided by the Environmental Police of Bahia were insufficient to carry out analysis.

Infractions involving wildlife

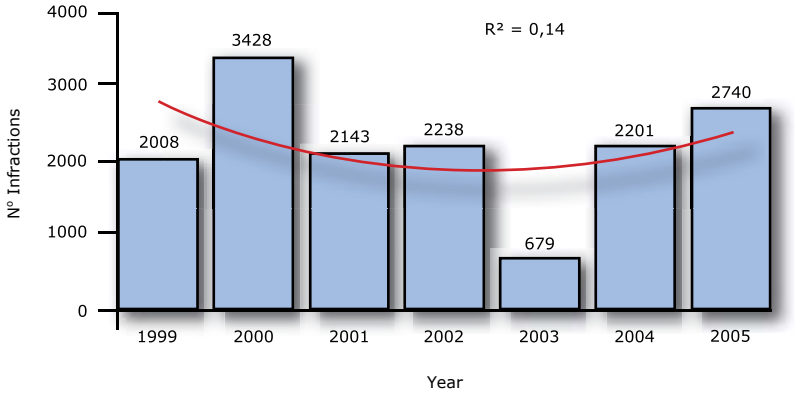
Graph 3 - Number of infractions issued by the Environmental Police of RJ, 1999 to 2005.



Source: Battalion of the Forestry and Environment Police of the State of Rio de Janeiro

The four years which had data available did not show any trend.

Graph 4 - Number of infractions issued by the Environmental Police of MG, 1999 to 2005.

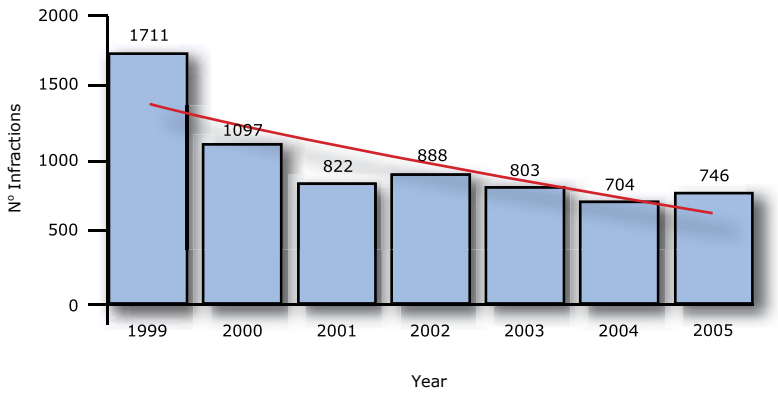


Source: Directory of Environment and Traffic of the Miltary Police of the State of Minas Gerais

The infractions issued annually by the Environmental Police of Minas Gerais do not show any pattern during the study period. There was an 1.70 fold increase, between 1999 and 2000, a decrease of 1.40 times the next year, followed by a stabilization the year after, decreasing then, 3.30 times in the year of 2003 compared to the previous year. This then rose with the same force the following year to finally grow 1.21 times at the end of the serie.

Infractions involving wildlife

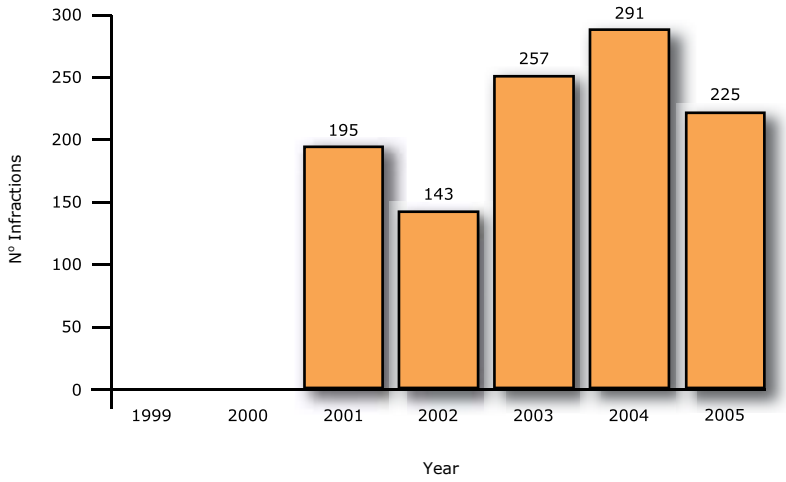
Graph 5 - Number of infractions issued by the Environmental Police of SP, 1999 to 2005.



Source: Battalion of the Environmental Military Police of the State of São Paulo.

It is noted in the adjacent graph that the number of infractions issued by the Environmental Police of São Paulo show a falling trend throughout the study series. Considering the first year of the series and the last, the fall was a 2.29 fold drop; for the main period between 1999 and 2000: the fall was 1.56 times. The second lastest fall occurred in the subsequent year, 1.33 times and, from then on there was a slight stablization, with values varying between 822 and 746 infractions, which means a 1.10 fold decrease.

Graph 6 - Number of infractions issued by IBAMA of ES, 1999 to 2005.

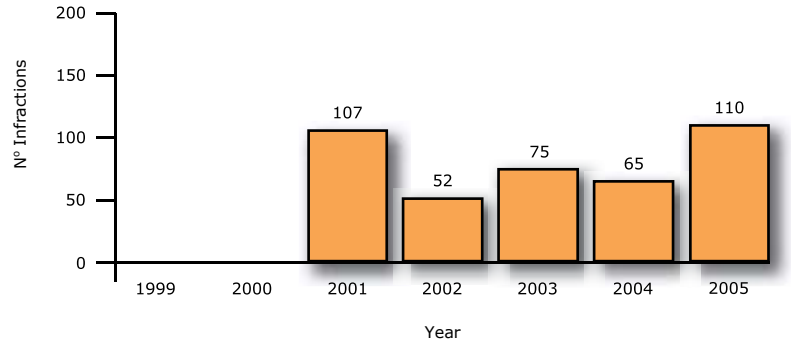


Source: IBAMA of the State of Espírito Santo.

The data relative to Espírito Santo starts in 2001 and shows a fall of 1.36 fold, between that year and 2002; coming to grow substantially 1.80 times in the following year, and another 1.13, between 2003 and 2004, to finally drop 1.29 fold in the last year.

Infractions involving wildlife

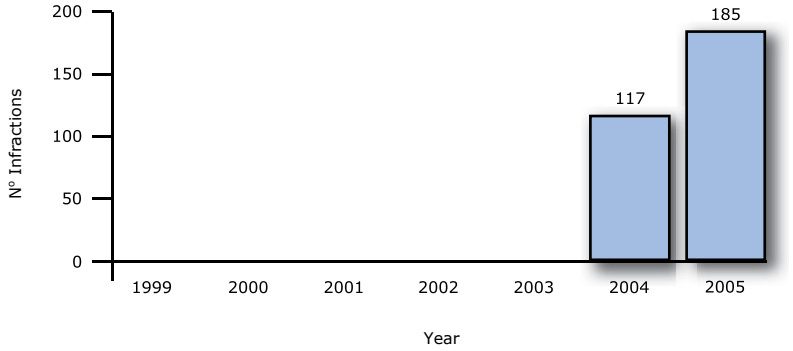
Graph 7 - Number of infractions issued by IBAMA of BA, 1999 to 2005.



Source: IBAMA of the State of Bahia.

No data for 1999 and 2000 was provided. Between 2001 and 2002, the largest fall in the series was registered (i.e. 2.06 fold) to then grow in the following year 1.44 fold; shrinking slightly in 2004, 1.15 times; and showing its biggest increase in the last year of the series, 1.69 fold.

Graph 8 - Number of infractions issued by IBAMA of SP, 1999 to 2005.



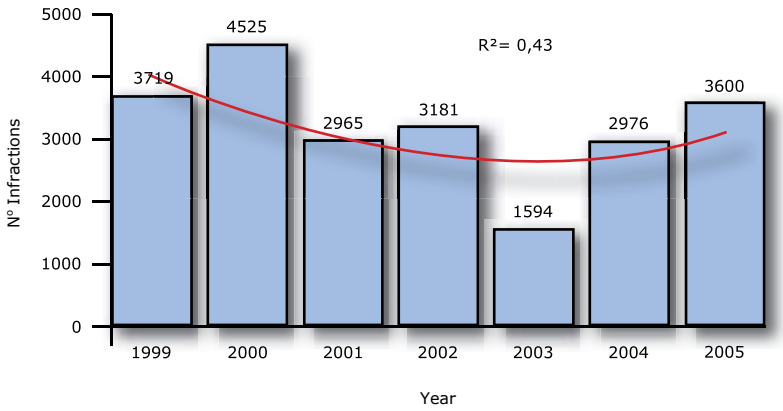
Source: IBAMA of the State of São Paulo.

The data supplied by IBAMA from São Paulo was insuffcient for analysis.

The IBAMA of Rio de Janeiro and of Minas Gerais did not reply to the questionnaire.

An overall analysis concerning the infractions issued by the environmental police for the states belonging to the Central Corridor was not possible since the Police Company of Bahia only provided data for the first two years of the series.

Graph 9 - Number of infractions issued by the Environmental Police of the States belonging to the Serra do Mar Corridor, 1999 to 2005.

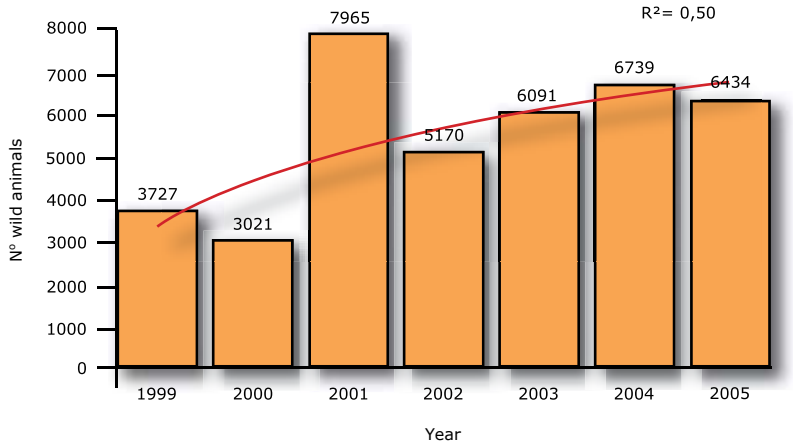


Source: Environmental Police of the States of RJ, of MG and of SP.

Between 1999 and 2000, there was an increase of 1.22 fold the number of infractions, followed by a significant fall of 2.84 times, between 2000 and 2003. The performance rebounded in the two subsequent years, a rise of 2.26 fold.

Seizure of wild animals

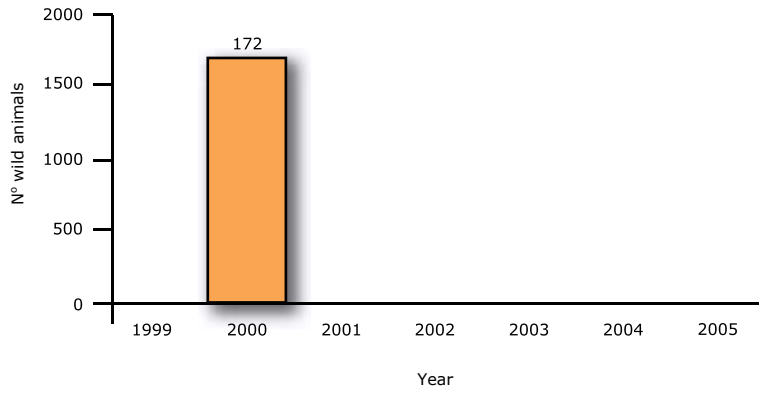
Graph 10 - Number of wild animals seized by the Environmental Police of ES, 1999 to 2005.



Source: Battalion of the Environmental Military Police of the State of Espírito Santo.

In Espírito Santo, the number of wild animals seizured by the Environmental Police shows a rising trend. The difference between the highest and lowest annual totals in seizures is of 2.63 times.

Graph 11 - Number of wild animals seized by the Environmental Police of BA, 1999 to 2005.

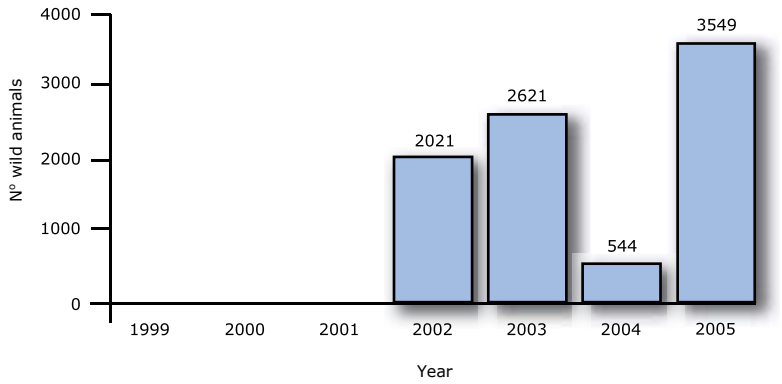


Source: Company of the Environmental Protection Police of the State of Bahia.

In Bahia, the absence of enough data does not allow for an analysis.

Seizure of wild animals

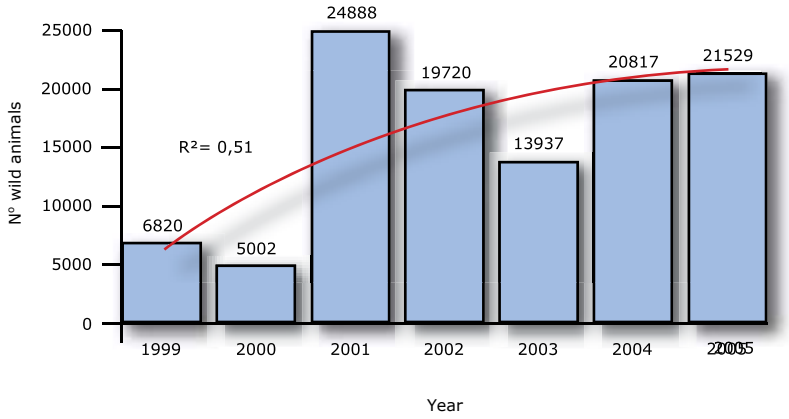
Graph 12 - Number of wild animals seized by the Environmental Police of RJ, 1999 to 2005.



Source: Battalion of the Forestry and Environment Police of the State of Rio de Janeiro.

The Environmental Police of Rio de Janeiro did not provide data covering the first three years of the series. One notes a big drop in the number of seizures between 2003 and 2004, and an increase of 6,52 fold, when comparing the years of 2004 and 2005.

Graph 13 - Number of wild animals seized by the Environmental Police of MG, 1999 to 2005.

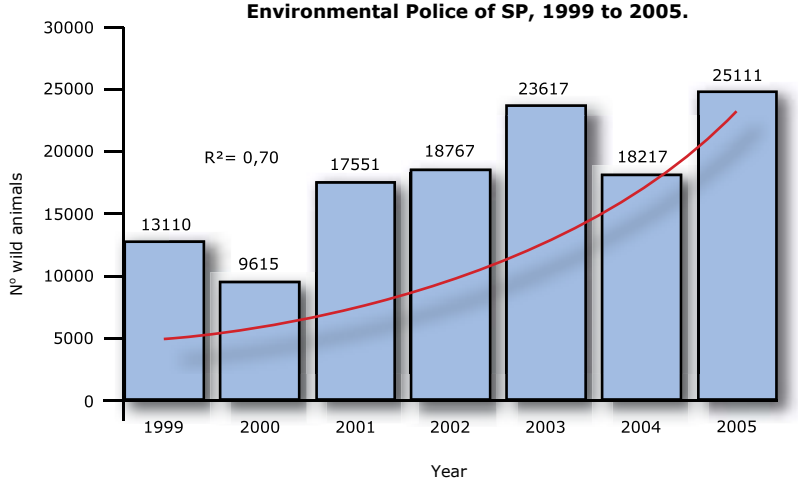


Source: Directory of Environment and Traffic of the Miltary Police of the State of Minas Gerais

Minas Gerais was where was registered one of the greatest seizures of wild-life, it also shows a rising trend in their numbers. In 2000, there is a drop in the number of apprehensions in comparison to 1999. In 2001, there was a significant increase followed by a decrease two years later, with a sharp fall in 2003. The trend reverts in 2004, maintaing itself practically at the same level in 2005.

Seizure of wild animals

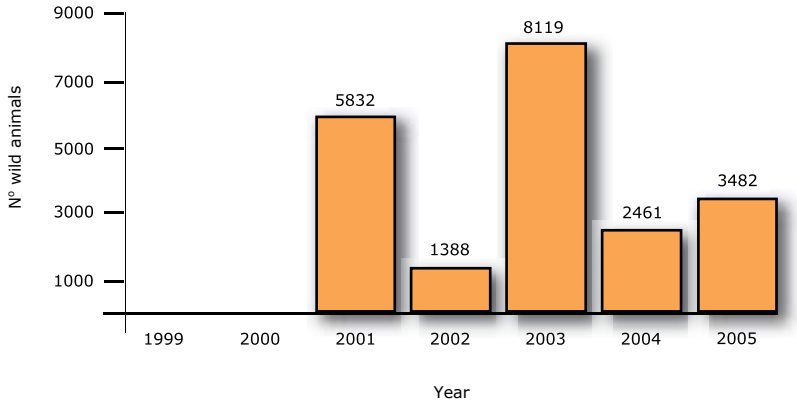
Graph 14 - Number of wild animals seized by the Environmental Police of SP, 1999 to 2005.



Source: Environmental Military Police of the State of São Paulo.

São Paulo shows a pattern in its apprehension of wildlife similar to that of Minas Gerais. It was in this State that the trendline fit best (R^2=0.70). The seizures show constant growth except in 2000 and 2004. The increase between the beginning and the end of the series was of 1.91 fold.

Graph 15 - Number of wild animals seized by IBAMA of BA, 1999 to 2005.

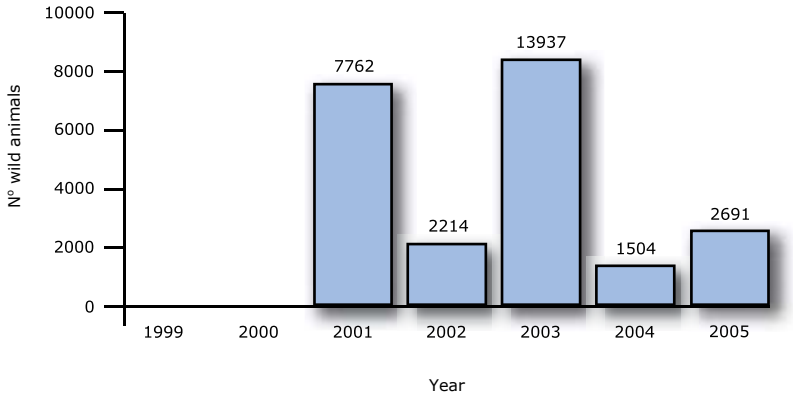


Source: IBAMA of the State of Bahia.

The data on seizures for IBAMA in Bahia do not show any pattern.

Seizure of wild animals

Graph 16 - Number of wild animals seized by IBAMA of SP, 1999 to 2005.



Source: IBAMA of the State of São Paulo.

The data from IBAMA of São Paulo also did not show any trend.

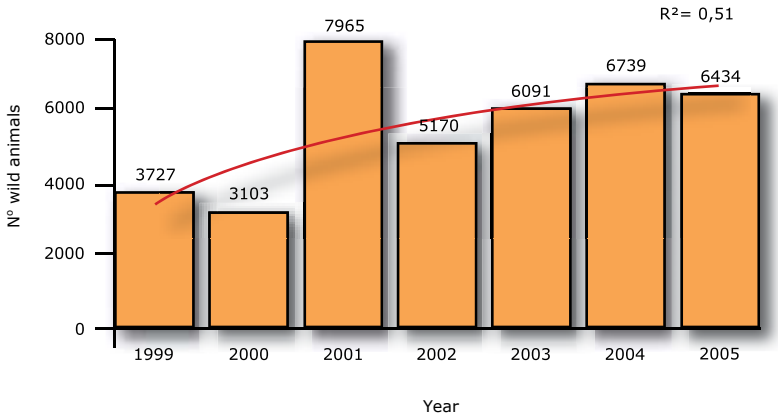
The IBAMA of Espírito Santo did not disclose data regarding the number of animals seized.

The IBAMA of Rio de Janeiro and of Minas Gerais did not reply to the questionnaire.

Overview of the Corridors

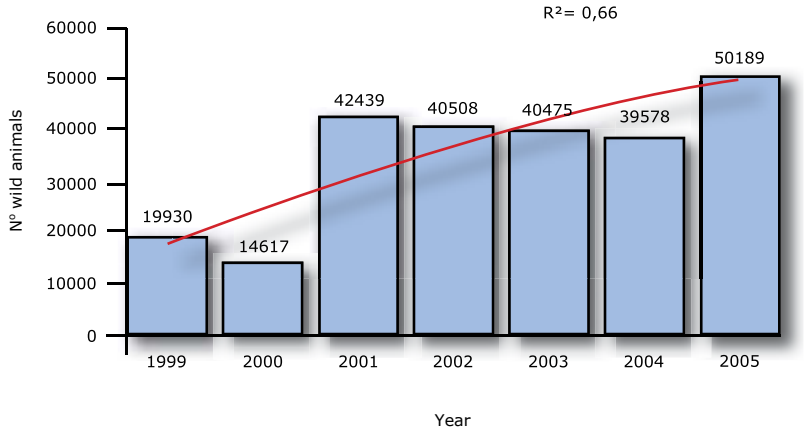
The seizure of wild animals by the Environmental Police of the States of the Central Corridor illustrate a slight upward trend, despite peaking in 2001. From 2002 there was an increase until 2004, and the year of 2005 showed a slight drop from the previous year. Considering the beginning and end of the series, the rise was 1,73 fold.

Graph 17 - Number of wild animals seized by the Environmental Police of the States belonging to the Central Corridor, 1999 to 2005.



Source: Environmental Police of the States of ES and BA.

Graph 18 - Number of wild animals seized by the Environmental Police of the States belonging to the Serra do Mar Corridor, 1999 to 2005.



Source: Environmental Police of the States of RJ, of MG and of SP.

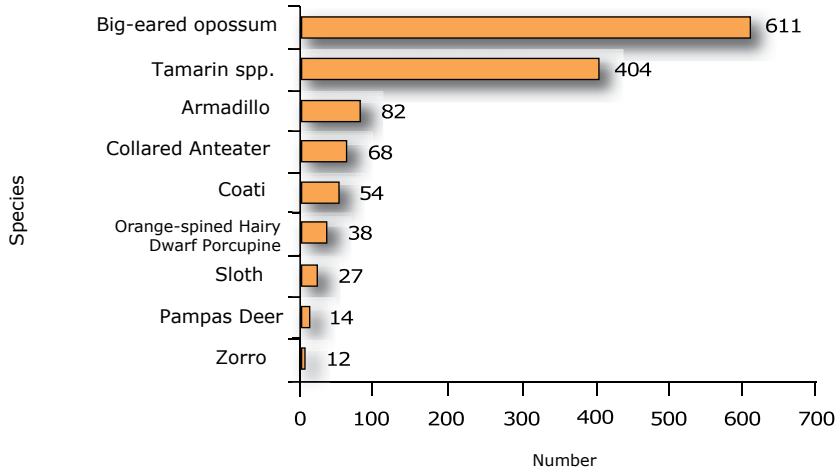
In the Serra do Mar Corridor, a pattern exists for the seizures, with a decrease in numbers during four years, with the largest decrease being registered between 1999 and 2000 (1.36 times); and a steady decrease amounting to 1.07 fold, in the period of 2001 to 2004. The highest increase was observed between 2000 and 2001 (2.90 fold), and between the last two years of the series, with an increase in seizures of 1.26 times.

Due to a lack fo data on seizures carried out by IBAMA in some states, the analysis on the corridors was compromised.

Most seized Mammals

In Espírito Santo, two species of mammals represent almost ¾ of all mammals captured: the Big-eared opossum (*Didelphis aurita*) with 45.0% of cases, and tamarins (*Callitrichidae* spp.), at 29.8%. The other species routinely have percentages of less than or equal to 6.0%.

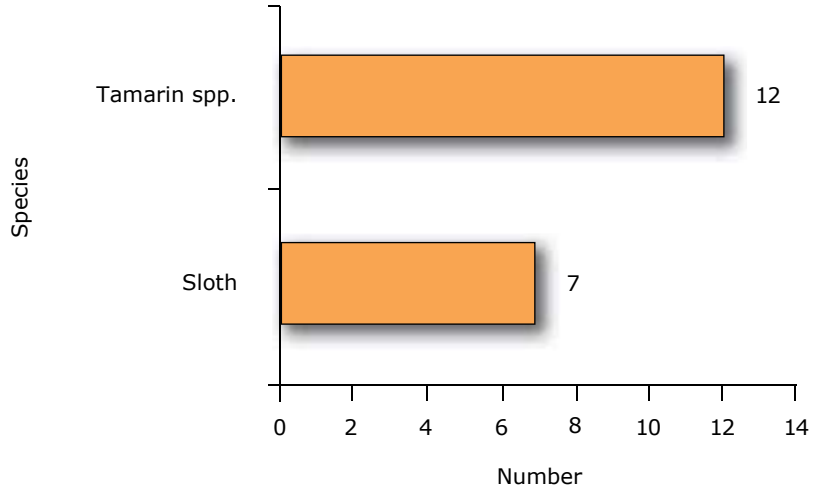
Graph 19 - Number of most seized mammals by the Environmental Police of ES, according to species, 2001 to 2005.



Source: Battalion of the Environmental Military Police of the State of Espírito Santo.

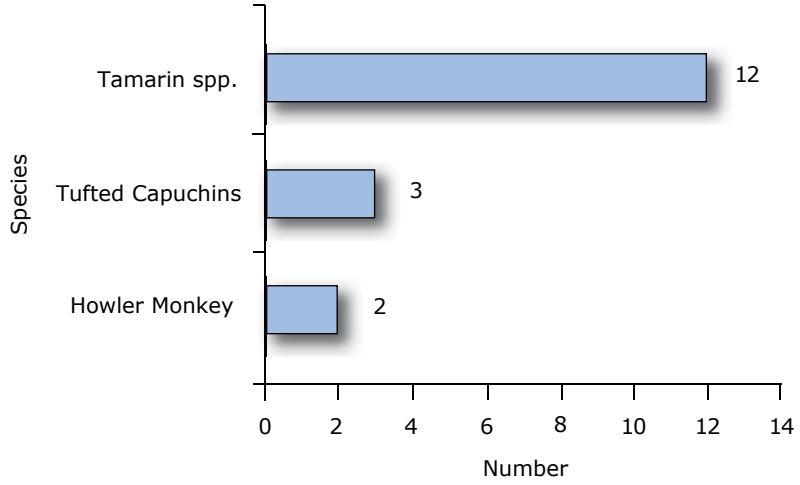
Most seized Mammals

Graph 20 - Number of most seized mammals by the Environmental Police of BA, according to species, 2005.



Source: Company of the Environmental Protection Police of the State of Bahia.

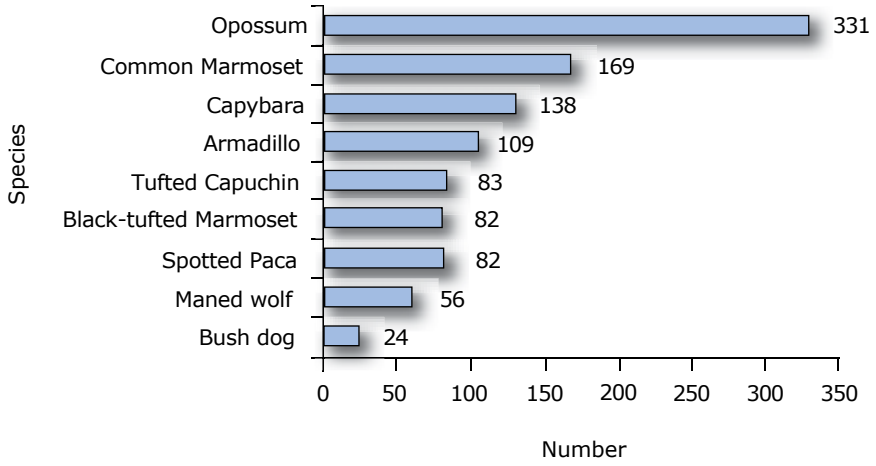
Graph 21 - Number of most seized mammals by the Environmental Police of RJ, according to species, 2005.



Source: Battalion of the Forestry and Environment Police of the State of Rio de Janeiro.

Most seizure Mammals

Graph 22 - Number of most seized mammals by the Environmental Police of MG, according to species, 2001 to 2005.



Source: Directory of Environment and Traffic of the Miltary Police of the State of Minas Gerais

In Minas Gerais, the main species of mammals seized are opossums, common marmosets, capybaras and armadillos, with 30.8, 15.7, 12.8 and 10.1%, respectively. The other species have percentages of less than 8%.

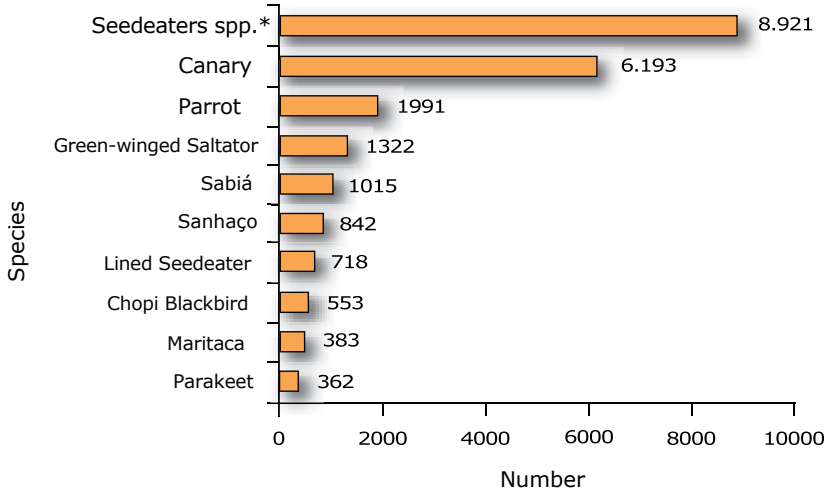
The Environmental Police of São Paulo did not inform on numbers, nor the species of mammals most seized.

Most seized Birds

The birds belonging to the genus *Sporophila*, together with the canaries, represent almost 68,0% of birds seized by the Environmental Police of Espírito Santo. The other species have values of less than 10,0%.

*Given the regional differences in nomenclature for the genus *Sporophila* (coleiro, coleirinha, papa-capim), it was not possible to classify the animals by species from the data obtained from the questionnaires.

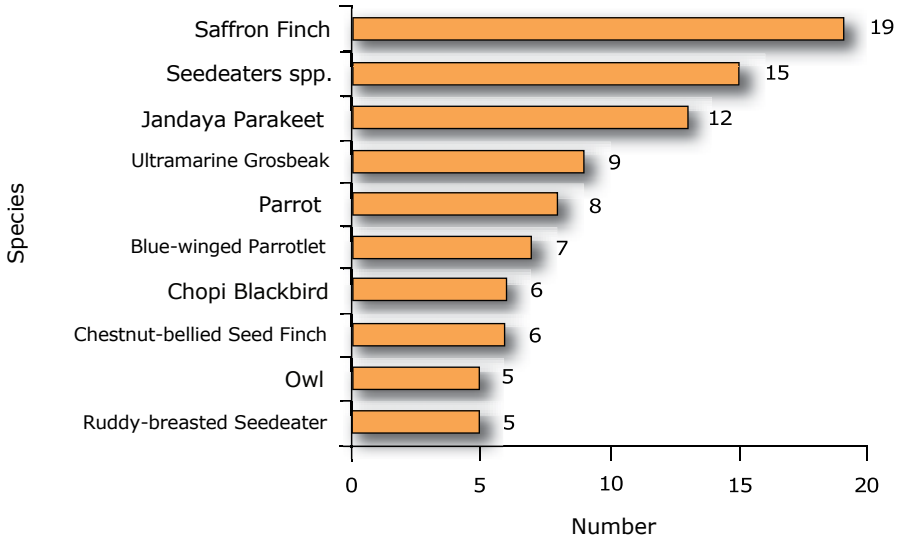
Graph 23 - Number of most seized birds by the Environmental Police of ES, according to species, 2001 to 2005.



Source: Battalion of the Environmental Military Police of the State of Espírito Santo.

Most seized Birds

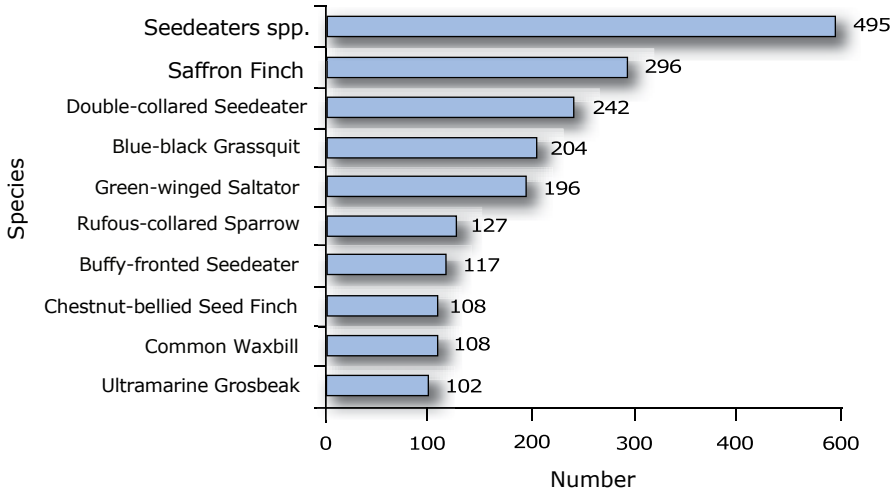
Graph 24 - Number of most seized birds by the Environmental Police of BA, according to species, 2005.



Source: Company of the Environmental Protection Police of the State of Bahia.

In Bahia, despite the small number of birds seized, the Saffron finch, and the birds of the genus *Sporophila* and the Jandaya parakeet represent 50.5%.

Graph 25 - Number of most seized birds by the Environmental Police of RJ, according to species, 2005.

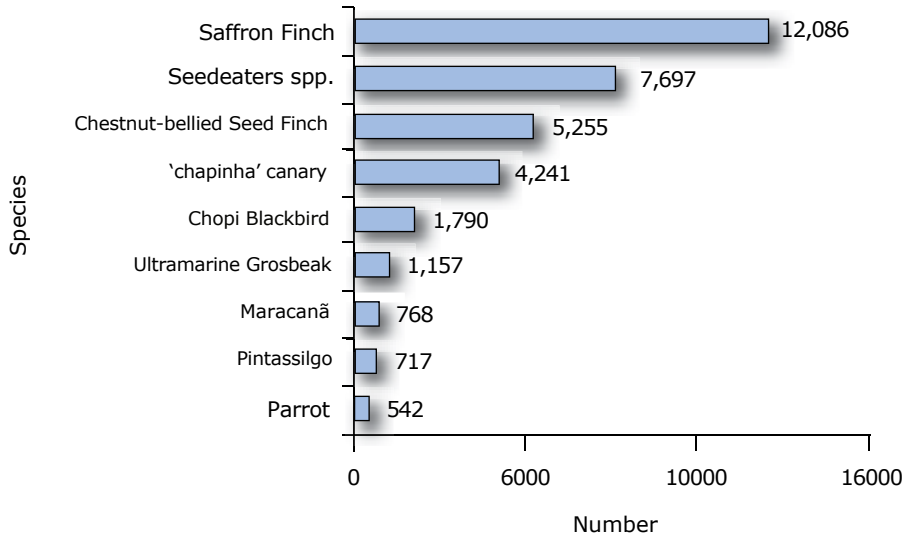


Source: Battalion of the Forestry and Environment Police of the State of Rio de Janeiro.

The birds of the genus *Sporophila* are the most seized by the Environmental Police of Rio de Janeiro, at almost 37.0%. Next follow the species Saffron finch, Blue-black grassquit, and the Green-winged saltator with 14.8%, 10.2%, and 9.8%, respectively.

Most seized Birds

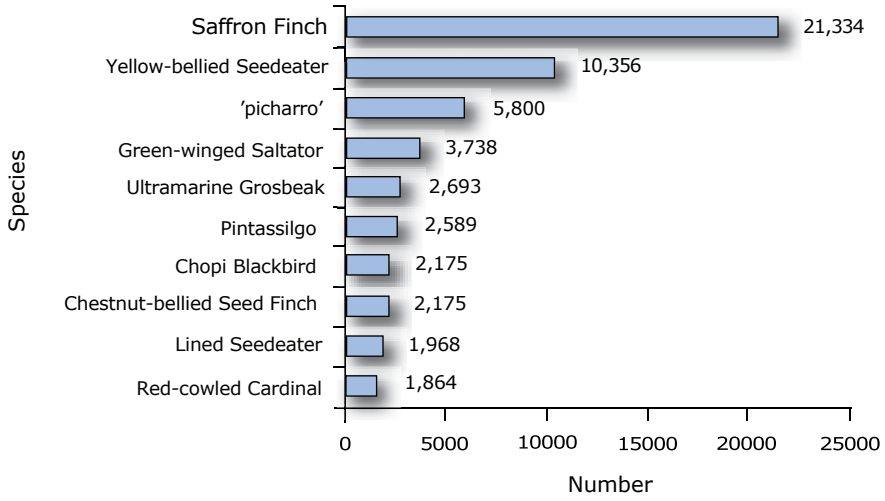
Graph 26 - Number of most seized birds by the Environmental Police of MG, according to species, 2001 to 2005.



Source: Directory of Environment and Traffic of the Miltary Police of the State of Minas Gerais

In Minas Gerais, the Saffron finch represents 35.3% of birds seized, followed by birds of the genus *Sporophila* and by the Chestnut-bellied Seed finch, with 22.5 and 15.3%, respectively. The other species represent 26.9%.

Graph 27 - Number of most seized birds by the Environmental Police of SP, according to species, 2001 to 2005.

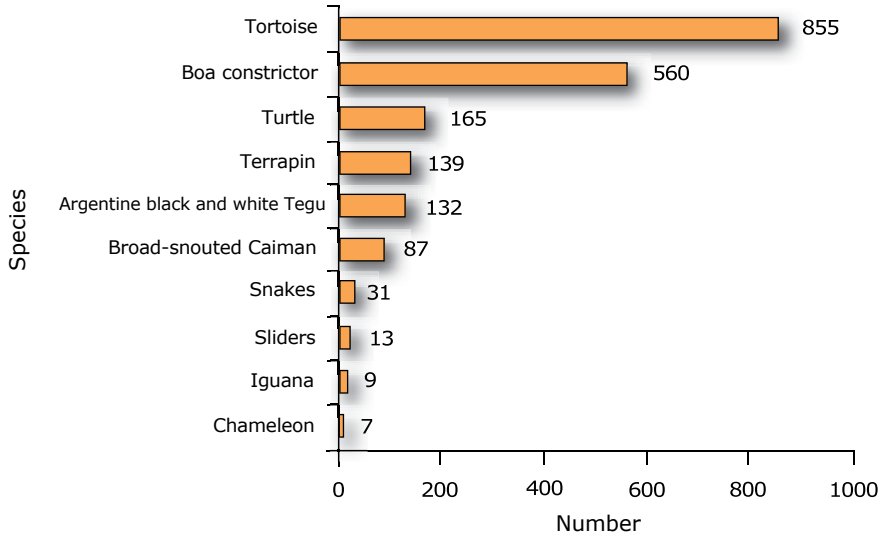


Source: Environmental Military Police of the State of São Paulo.

São Paulo is the State where the Environmental Police most seizes birds. The Saffron finch represents 35.3% of birds apprehended, followed by the Yellow-bellied Seedeater with 18.8%, and the 'picharro', at 10.6%. The remaining species have percentages of less than 7.0%.

Most seized Reptiles

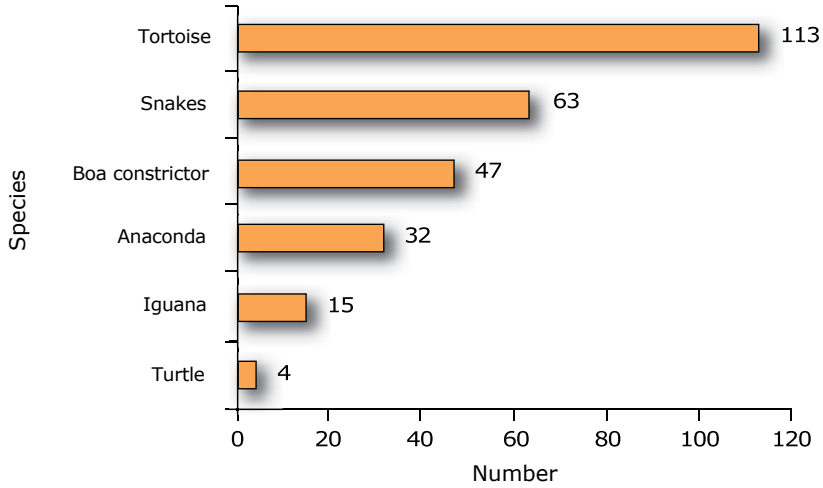
Graph 28 - Number of most seized reptiles by the Environmental Police of ES, according to species, 2001 to 2005.



Source: Battalion of the Environmental Military Police of the State of Espírito Santo.

In Espírito Santo, tortoises represent 42.8% of reptiles seized, followed by the boa constrictor with 28.0%. The other species total 29.2%.

Graph 29 - Number of most seized reptiles by the Environmental Police of BA, according to species, 2005.

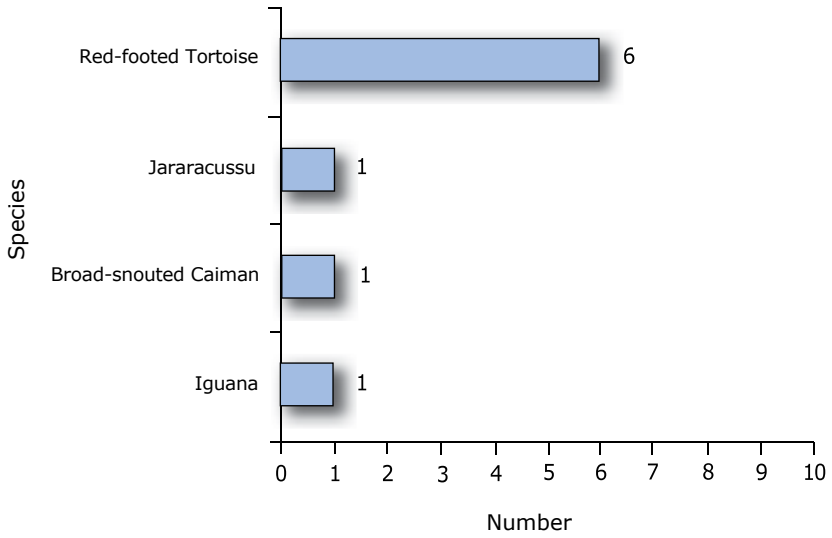


Source: Company of the Environmental Protection Police of the State of Bahia.

In Bahia, the tortoise represents 41.2% of seized reptiles,followed by snakes, boa constrictors and anacondas, at 23.0, 17.2 and 11.7%, respectively.

Most seized Reptiles

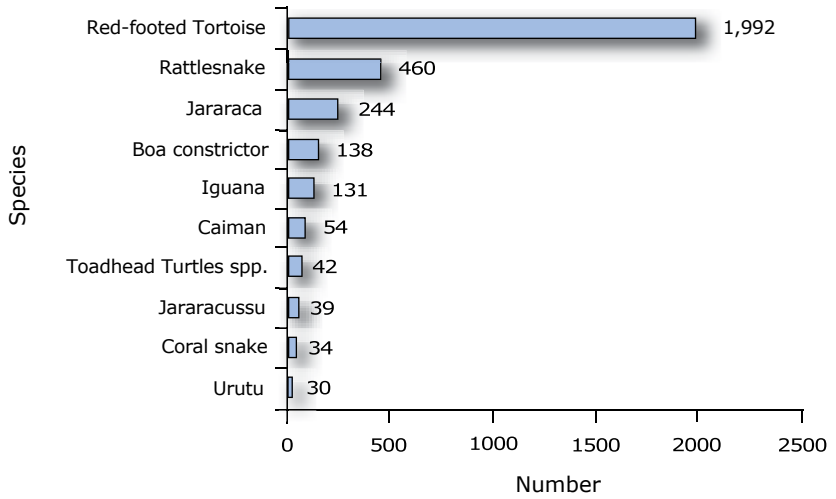
Graph 30 - Number of most seized reptiles by the Environmental Police of RJ, according to species, 2005.



Source: Battalion of the Forestry and Environment Police of the State of Rio de Janeiro.

The data provided by the Environmental Police of Rio de Janeiro did not permit analysis.

Graph 31 - Number of most seized reptiles by the Environmental Police of MG, according to species, 2001 to 2005.



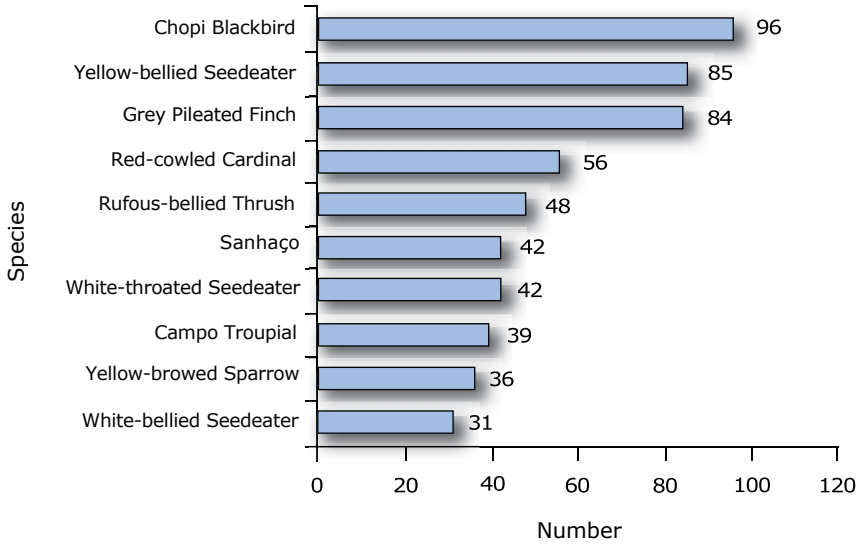
Source: Directory of Environment and Traffic of the Miltary Police of the State of Minas Gerais

The Red-footed tortoise is the most seized reptile in Minas Gerais, representing 63.0%, followed by the rattlesnake and pitviper, with 14.5 and 7.7%, respectively. The remaining species total less than 15.0%.

The Environmental Police of São Paulo did not provide data on reptile apprenhensions.

Other Most seized Species

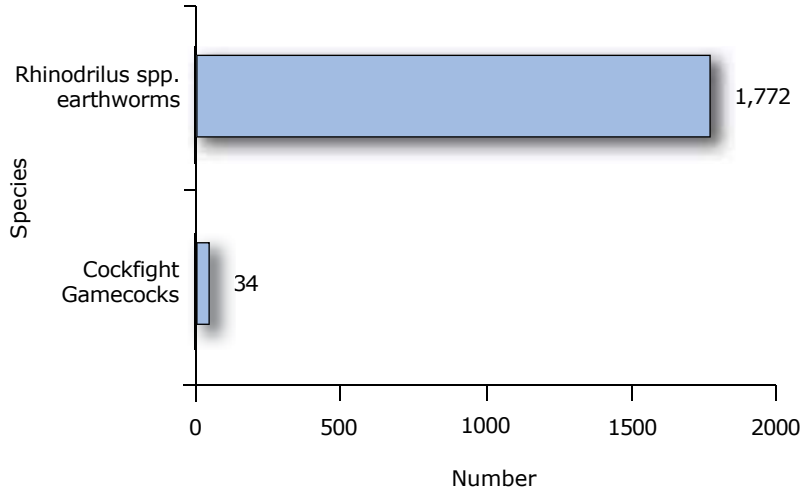
Graph 32 - Number of other animals most seized by the Environmental Police of RJ, according to species, 2005.



Source: Battalion of the Forestry and Environment Police of the State of Rio de Janeiro.

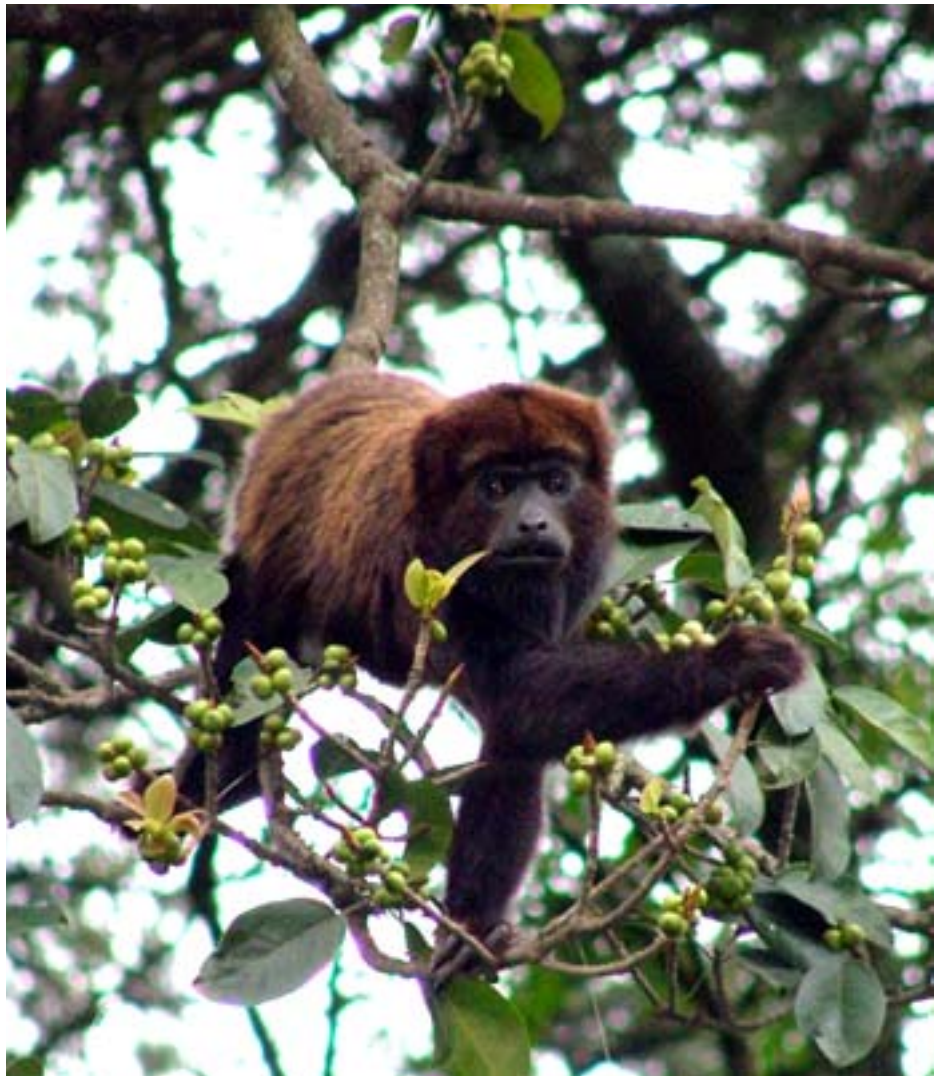
Among the other species most seized by the Environmental Police of Rio de Janeiro, three are noteworthy: the Chopi blackbird, with 17.2%; the Yellow-bellied seedeater with 15.2%, and the Grey Pileated finch, with 15.0%.

Graph 33 - Number of other animals most seized by the Environmental Police of MG, according to species, 2001 to 2005.



Source: Directory of Environment and Traffic of the Miltary Police of the State of Minas Gerais

The Environmental Police of Espírito Santo, Bahia and of São Paulo did not provide data on other species of animals seized.



Brown Howler monkey *(Alouatta fusca)* - Photo: **André Camilli Dias**

Overview of the Corridors

In relation to species of mammals, birds and reptiles most seized by the Environmental Police and IBAMA, it was not possible to build graphs portraying the Central and Serra do Mar Corridors, since some agencies provided data covering the period from 2001 to 2005, while others limited themselves to the year of 2005.

Brown-throated Three-toed Sloth *(Bradypus variegatus)* - Photo: **O Globo**

Nomenclature of Animals

COMMON NAME	SCIENTIFIC NAME
Sloth	*Bradypus spp.*
Howler Monkey	*Alouatta spp.*
Bush dog	*Cerdocyon thous*
Capybara	*Hydrochoeris hydrochaeris*
Collared Peccary	*Tayassu tajacu*
Azara's Agouti	*Dasyprocta azarae*
Opossum	*Didelphis spp.*
Big-eared Opossum	*Didelphis aurita*
Oncilla	*Leopardus tigrinus*
Maned Wolf	*Chrysocyon brachyurus*
Capuchin	*Cebus spp.*
Orange-spined Hairy Dwarf Porcupine	*Sphiggurus villosus*
Spotted Paca	*Agouti paca*
South American Coati	*Nasua nasua*
Zorro	*Pseudalopex spp.*
Marmoset / Tamarin	*Callithrix spp.*
White-headed Marmoset	*Callithrix geoffroyi*
Common Marmoset	*Callithrix jacchus*
Black-tufted Marmoset	*Callithrix penicillata*
Collared Anteater	*Tamandua tetradactyla*
Armadillo	
Pampas deer	*Ozotocerus bezoarticus*

Table 1 - List of most seized mammals, according to common and scientific nomenclature.

Saffron finch (Sicalis flaveola) - Photo: **Zig Koch**

NOME COMUM	NOME CIENTÍFICO
Blue-and-yellow Macaw	*Ara ararauna*
Ultramarine Grosbeak	*Passerina brissonii*
Common Waxbill	*Estrilda astrild*
Lined Seedeater	*Sporophila lineola*
White-throated Seedeater	*Sporophila albogularis*
Seedeaters	*Sporophila spp.*
Canary	
Canario chapinha	*Sicalis flaveola*
Saffron Finch	*Sicalis flaveola*
Red-crested Cardinal	*Paroaria coronata*
Coleiro	*Sporophila spp.*
Yellow-bellied Seedeater	*Sporophila nigricollis*
Owl	
Chestnut-bellied Seed Finch	*Oryzoborus angolensis*
Red-cowled Cardinal	*Paroaria dominicana*
Jandaya Parakeet	
Maracanã	
Maritaca	
Parrot	*Amazona spp.*
Chopi Blackbird	*Gnorimopsar chopi*
Parakeet	
Buff-throated Saltator	*Saltator maximus*
Pintassilgo	*Carduelis spp.*
Buffy-fronted Seedeater	*Sporophila frontalis*
Sabiá	
Sanhaço	
Campo Troupial	*Icterus spp.*
Rufous-collared Sparrow	*Zonotrichia capensis*
Blue-black Grassquit	*Volatinia jacarina*
Green-winged Saltator	*Saltator similis*
Blue-winged Parrotlet	*Forpus xanthopterygius*

Table 2 - List of most seized birds, according to the common and scientific nomenclature

NOME COMUM	NOME CIENTÍFICO
Geoffroy's Toadhead Turtle	*Phrynops geoffroanus*
Camaleão	
Cascabel Rattlesnake	*Crotalus durissus*
Water snake	
Coral snake	*Micrurus spp.*
False Coral Snake	
Iguana	*Iguana iguana*
Tortoise	*Geochelone spp.*
Red-footed tortoise	*Geochelone carbonaria*
Caiman	*Caiman spp.*
Broad-snouted Caiman	*Caiman latirostris*
Jararaca	*Bothrops spp.*
Jararacussu	*Bothrops jararacussu*
Boa constrictor	*Boa constrictor*
Lizard	
Snake	
Anaconda	*Eunectes murinus*
Turtle	
Argentine black and white tegu	*Tupinambis merianae*
Sliders	*Trachemys spp.*
Urutu	*Bothrops alternatus*

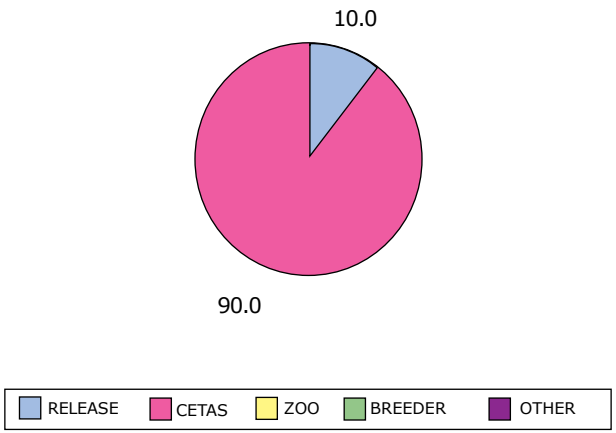
Table 3 - List of the most seized reptiles, according with the common and scientific nomenclature.

NB.: these lists were made from the common and scientific names of animals seized provided by the Environmental Police and IBAMA of the various states. Some common names are shown without their corresponding scientific names given the impossibility of cross-checking in the absence of more specific data from these enforcement agencies.

D'Orbigny's slider (*Trachemys dorbignyi*) - Photo: **Armando Catunda**

Destination of the Animals

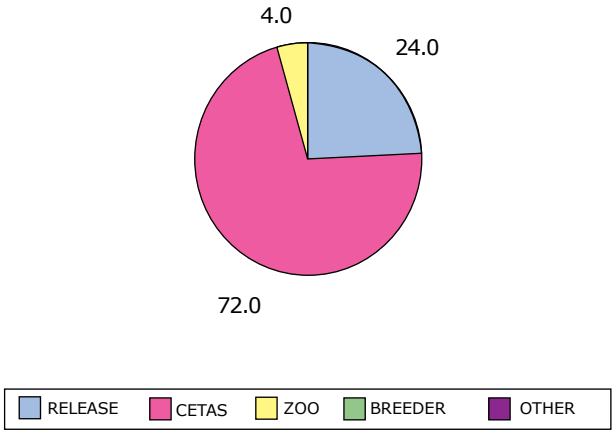
Graph 34 - Destination of animais seized (%) by the Environmental Police of ES, 2005.



Source: Battalion of the Environmental Military Police of the State of Espírito Santo.

Nearly all the animals seized by the Environmental Police of Espírito Santo (90%) were destined to the only CETAS (Wildlife Screening Center) available in the State; while the rest were released.

Graph 35 - Destination of animals seized (%) by the Environmental Police of BA, 2005.

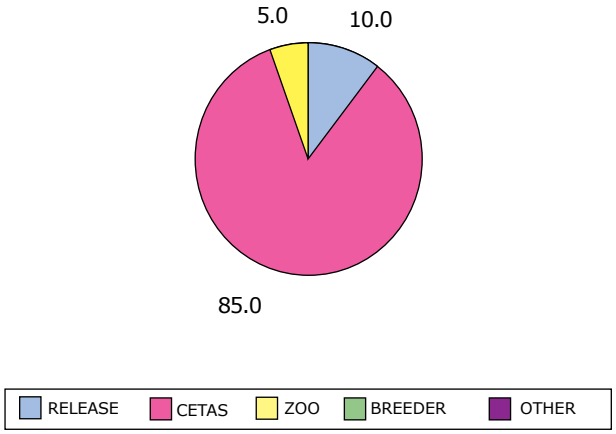


Source: Company of the Environmental Protection Police of the State of Bahia.

In Bahia, the near totality of seized animals were also forwarded to the CETAS (72%). Releases total 24%.

Destination of the Animals

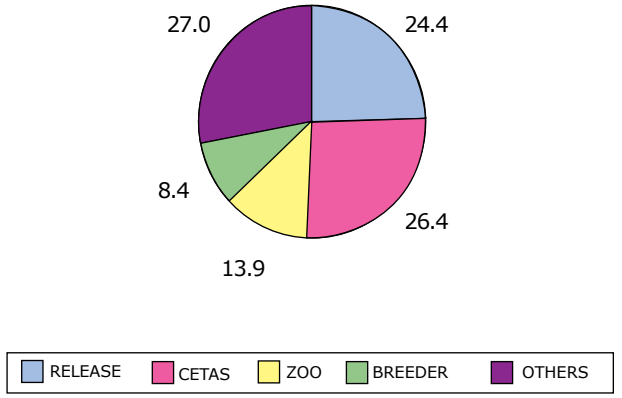
Graph 36 - Destination of animals seized (%) by the Environmental Police of RJ, 2005.



Source: Battalion of the Forestry and Environment Police of the State of Rio de Janeiro.

In Rio de Janeiro, the pattern repeats itself: the predominant allocation of animals is for CETAS (85%), followed by releases with 10%, and by zoos, with 5%.

Graph 37 - Destination of animals seized (%) by the Environmental Police of MG, 2005.

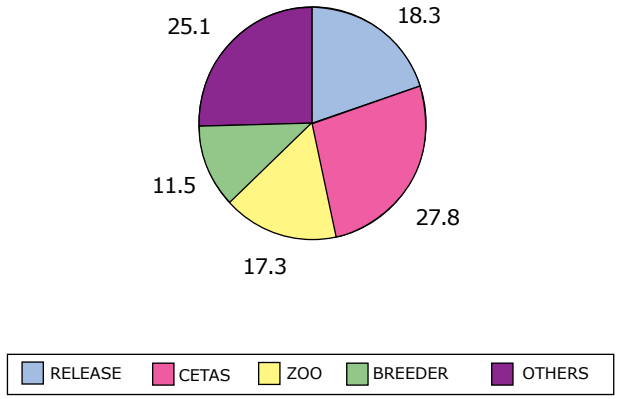


Source: Directory of Environment and Traffic of the Miltary Police of the State of Minas Gerais

Two allocation destinations are mostly used in Minas Gerais: the CETAS and releases, with just over 50% (in percentages, 26.4 and 24.4%, respectively. Zoos appear with almost 14%, and breeders with approximately 8%. Among the 27% listed as other destinations, there are: incinerations; donations; custodian care; deliveries to IBAMA and police stations.

Destination of the Animals

Graph 38 - Destination of animals seized (%) by the Environmental Police of SP, 2005.



Source: Environmental Military Police of the State of São Paulo.

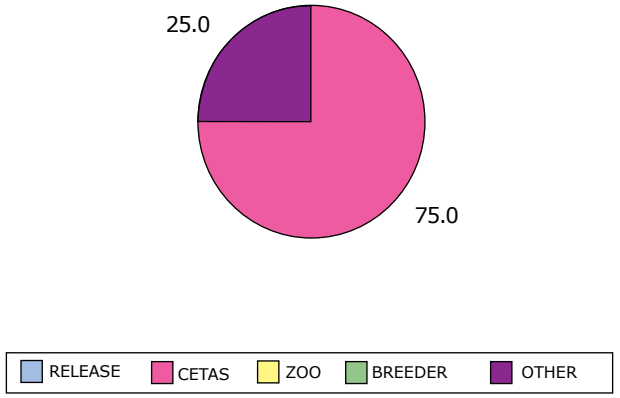
The types of destinations reported in São Paulo are similar to those of Minas Gerais, albeit with more distributed percentages. The CETAS appear with almost 28%, followed by releases and zoos, with 18.3% and 17.3%, respectively, and breeders with 11.5%. With respect to the 25.1% allocated to other destinations the Police informs that 20.1% remain with the culprits.

As the total sum for these allocations reported by the Environmental Police of São Paulo did not reach 100%, but 95%, we took the iniciative to add 5% to the 20.1% assigned as other destinations.

The CETAS are the predominant destination for wildlife in Bahia: 75%; and the remainder, according to IBAMA, are other destinations.

The IBAMA of Bahia was the only agency which reported the subsequent allocation given to the animals by CETAS itself specifying that: 65.02% were released, 4.02% remained within the CETAS, 2.06% were forwarded to zoos and 2.19% went to breeders. Deaths amounted to 22.25%, and 4.46% were labelled as other destinations, mostly as escapees according to the agency.

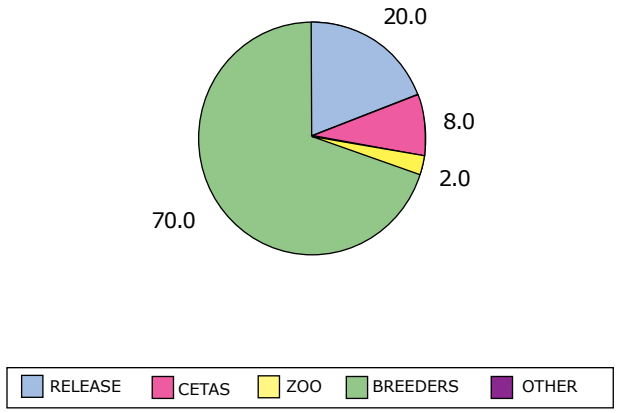
Graph 39 - Destinations of animals seized (%) by IBAMA of BA, 2005.



Source: IBAMA of the State of Bahia.

Destination of the Animals

Graph 40 - Destination of animals seized (%) by IBAMA of SP, 2005.



Source: IBAMA of the State of São Paulo.

Unlike the destinations given to the animals seized by the Environmental Police of São Paulo, IBAMA allocates 70% to breeders, 20% represent releases, 8% have other destinations, and 2% go to zoos.

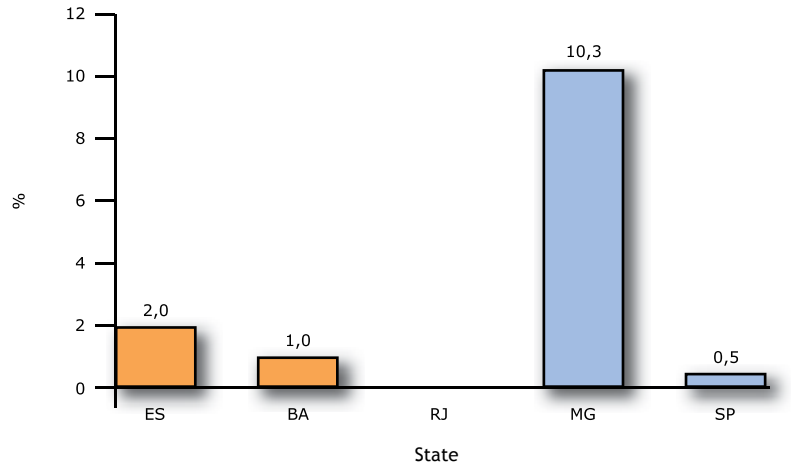
The IBAMA of Espírito Santo did not disclose the percentages of the destinations of the animals seized, citing only that the "majority" are destined to the only CETAS of the State.

The IBAMA of Rio de Janeiro and of Minas Gerais did not reply to the questionnaire.

Blunthead Tree Snake (*Imantodes cenchoa*)
Photo: **Giuseppe Puorto**

Mortality of the Animals

Graph 41 - Mortality (%) of animals seized by the Environmental Police of the five States, 2005.



Source: Environmental Military Police of the States of Espirito Santo, Bahia, Minas Gerais and of São Paulo.

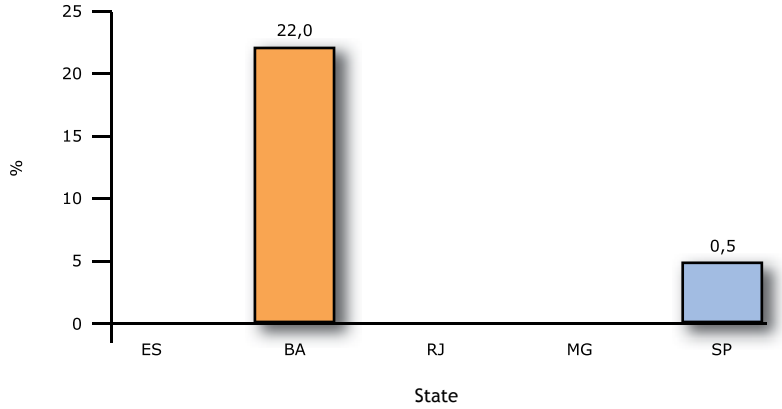
Minas Gerais has the highest mortality for animals seized by the Environmental Police (10.3%) followed by Espírito Santo, Bahia and São Paulo, with 2.0%, 1.0%, and 0.5%, respectively.

Rio de Janeiro did not provide such data.

The high mortality rate for animals seized by IBAMA in Bahia, 22.0%, contrasts with the rate reported by the Environmental Police of 1.0%. The same happens with the data of São Paulo: 5.0% for Ibama, and 0.5% for the Environmental Police. These are quite disparate rates, complicating any analysis.

The IBAMA of Espírito Santo did not provide this data, while the IBAMA of Rio de Janeiro and of Minas Gerais did not reply to the questionnaire.

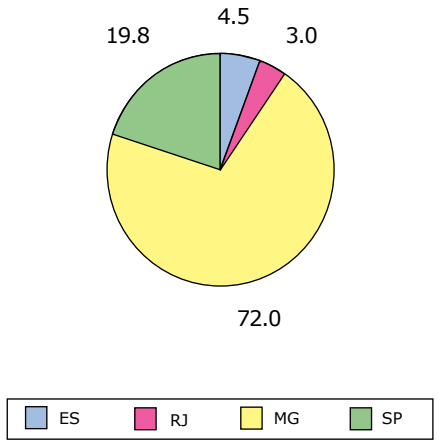
Graph 42 -Mortality (%) of animals seized by IBAMA, 2005.



Source: IBAMA of the States of Bahia and of São Paulo.

Detailing the actions of the Environmental Police

Graph 43 - Share (%) of each State in issuing infractions, 2005.



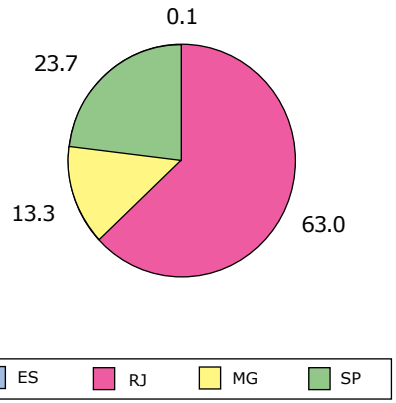
Source: Environmental Police of the States of Espirito Santo, Rio de Janeiro, Minas Gerais and of São Paulo.

The comparison between the data of the various State Environmental Police was done by taking into consideration the last year of the study series (i.e. 2005). The percentages were calculated according to each State.

On the question item for issuing infractions, Minas Gerais shows the greatest share with 72.7%, followed by São Paulo with 19.8%. The other Police forces present percentages below 5.0%.

The Environmental Police of Bahia did not disclose data regarding the issuing of infractions, firearms, traps, and wildlife seized, hence being excluded from this analysis.

Graph 44 - Share (%) of each State in the apprehension of firearms and traps, 2005.



Source: Environmental Police of the States of Espirito Santo, Rio de Janeiro, Minas Gerais and of São Paulo.

When compared, the percentages relating to the apprehension of firearms and traps, Rio de Janeiro was the one that most stood out, with 63.0%, followed by São Paulo, and Minas Gerais, with 23.7%, and 13.3%, respectively. The share of Espírito Santo in this was negligible.

Golden-headed Lion Tamarin *(Leontopithecus chrysomelas)* - Photo: **Luciano Candisani**

With institutiions undermined, wildlife suffer the consequences.

A detailed look at the replies and observations (or lack thereof) contained in the questionnaires sent to the States illustrates the neglect towards wildlife.

As with other forms of organized crime, if institutions do not enhance their structures and do not share information, criminal networks expand their operations. The growth in numbers of animals seized makes evident that the illegal trade is intensifying. Moreover, the lack of criteria for releases and for destination sites hinders enforcement actions, delegated mostly to answering tip-offs.

The proposed indicators suggest that wildlife enforcement is not a priority for the Environmental Police; whereas IBAMA, due to a lack of replies, does not even allow for detailed analyses of their institutional performance in the five States.

The flow of animals allocated to breeders is another troubling aspect, especially because if this is a flaw linked to the illegal trade, the question of who has control over animals kept in captivity, and whether this is a planned systemic exploit raises many concerns.

ESPÍRITO SANTO

IBAMA – Informs on the number of offences involving wildlife, but does not detail the total count of animals seized. It also makes evident their unfamiliarity of the species most seized, since these are generically assorted as passerines, parrots; snakes and mammals. Regarding their allocation, it generically points out that the 'majority' of animals are forwarded to the CETAS.

The lack of data and consistency in information suggests that this unit of IBAMA has no control over the animals removed from trafficking which are considered criminal evidence. And if IBAMA can not specify how many and which animals it seizes, nor to where these are allocated, then perhaps the control over trafficking is impaired in this State.

Animals confiscated from the illegal trade, after passing through screening or breeding centers, end up acquiring a validated origin which permits them to be later forwarded to another institution. Therein lies the security breach, and the severity of the lack of control over these animals by the enforcement agency itself.

When specifying its agency's structure, it included the number of enforcement agents i.e. the Environmental Police. Finally, IBAMA highlights practically all the difficulties listed in the questionnaire without opting for 'lack of governmental support' nor citing 'barriers in the legislation'.

Environmental Police – Provides the number of infractions and animals seized, but can only give common names for the most seized. In this sense, the release figures are noteworthy -10% of all seizures - given that the animals are not correctly identified, how can they be released? The mortality rate also lies outside the parameter usually observed for apprenhensions: only 2%. In highlighting their difficulties, many items were checked for, including barriers in the legislation, but they did not include the lack of government support nor the lack of integration with other agencies as issues.

Bushmaster *(Lachesis muta)* - Foto: **DG Consultoria**

BAHIA

IBAMA – Noted on the questionnaire that the National Environment System (SISNAMA) does not work ("the environmental agencies of the State and municipalities do not act fully in this sector, which obliges IBAMA to absorb a much higher share of the total demands of the State"). IBAMA also emphasized the lack of screening centers and affirmed that the resources devoted towards the agency for wildlife enforcement were "insufficient".

IBAMA reports that 75% of animals seized were destined to the existing CETAS of the State.

In the CETAS, the release rate is quite high: 65% of animals. It is necessary to clarify whether technical criteria exist for such a high number of releases, or if these only arise from a resulting lack of allocation sites.

Apparently, there are no criteria since the agency itself says as a comment in its questionnaire that "the quantity of animals seized informed for the period (2001/2005) is approximate, considering that part of the wildlife seized is returned immediately to nature even before their cataloging, when the situation so requires. When this happens, an estimation of the totals seized is recorded, without a precise indication of the species".

Gilt-edged Tanager *(Tangara cyanoventris)* - Photo: **Zig Koch**

NB.: If IBAMA is unaware of what it is releasing into nature, there exists the risk of introducing new species in areas where they do not occur.

Apparently, their mortality rate in animals is the highest among the States, reaching 38.6%. This because, from the seizure until destination (CETAS) 22% die; and of the 75% that arrive at CETAS another 22.25% succumb soon after.

In listing their difficulties, IBAMA only cite the lack of staff, vehicles, fuel and CETAS units. Even having complained that the agencies of SISNAMA do not work, it failed to flag the lack of integration with other public environmental agencies as an issue.

Environmental Police – Does not report the number of infractions nor the total animals seized, but specifies for example, that exactly 24% were released; and that 1% died. Indeed this percentage of deaths is extremely low, since the quantity of animals lost in seizures is normally always higher.

In matters relating to the difficulties faced by institutions, this Environmental Police force marks all the items, demonstrating a coherent stance since if an agency feels it is missing everything, then it certainly lacks government support.

NB.: Specifically regarding this State, one information is rather conflicting: IBAMA informs that 22% of seized animals die, whereas the COPPA (Police Company for Environmental Protection) reports that only 1% die, drawing attention to the fact that this institution did not inform on the total of animals seized.

RIO DE JANEIRO

IBAMA – despite being contacted dozen of times, and having participated in the Workshop undertaken in the State, it did not reply to the questionnaire throughout the project's development.

Environmental Police - The figures on most seized species are surprising: the estimated number of reptiles seized in 2nd, 3rd and 4th places are for one iguana, one jararacussu, and one broad-snouted cai-man. In first place, are six tortoise specimens (a species widely trafficked and seized in the other states). As for the mammals, in first place is the tamarin (unidentified species) with 12 specimens; followed by the capuchin, three specimens; and howler monkey, two specimens.

In relation to the difficulties faced by the institutions, it points to the lack of integration with other agencies and the lack of destination sites to allocate animals. This Environmental Police does not mention a lack of infrastructure, nor staff or governmental support, but the number of animals seized is the lowest among all police forces (3549 in 2005). Despite reporting the lack of CETAS, 85% of seized animals are allocated there.

Black Howler *(Alouatta caraya)* - Photo: **Renctas**

Barn Owl (Tyto alba) - Photo: **Funpeb**

MINAS GERAIS

IBAMA – despite being contacted dozen of times, and having participated in the Workshop undertaken in the State, during the project it did not reply to the questionnaire.

Environmental Police – Demonstrated great consistency in completing the questionnaire, with data listed in detail, including percentages for the other destinations of the animals seized (incineration, custodian, donation etc). Despite being the only agency to fill out all the information requested in the questionnaire in detail, it portrays a lack of structure and support in the fight against wildlife trafficking, since it listed all the questionnaire items for difficulties faced by institutions, including the lack of governmental support.

This institution further pointed out difficulties in joint operations with the Highway Police, revealing a grave fact: the Highway Police are prevented from monitoring freight, passenger or excursion vehicles, in the BR-116 highway, except during pre-planned operations, and at pre-established sites. The BR-116 is the main line of trafficking in the region where over 60% of recorded seizures occur. It also highlists the lack of biologists or trained staff to carry out tests and emit biological/physio-sanitary certificates during seizures. Furthermore, it reports that the distribution system of rings/tags for breeders registered with IBAMA is a major ally of wildlife trade in the State.

SÃO PAULO

IBAMA – Reports the number of operations, animals seized, but is unable to define the species. The agency differed from others in creating a list of animals most delivered spontaneously by the population to the institution (but only for the city of São Paulo). In this sense, it is important to note that those animals most delivered by the population are namely those most trafficked and sold in pet shops authorised by IBAMA. The mortality rate is also low: 5%; yet it still is 10 times greater than stated by the Environmental Police of this same State. The IBAMA of São Paulo did not manifest itself regarding the difficulties faced in fighting the wildlife trade.

Environmental Police – The questionnaire was not answered in its entirety, and the agency justifies itself: "the various information requested not addressed in the report, are not being disclosed given they are of internal strategic and operational interest to this command". Among the items left blank were, for example, items for most seized mammals and reptiles.

Yet the mortality rate of animals seized – 0.51% - despite the apparent accuracy, is totally off the norm for these situations and compared to the other states. It is also noteworthy the high percentage of animals left with the offenders (20.1%). In addition, when one adds up the percentages regarding the allocations of the seized animals, the total sums to 95%.

On the issue regarding the difficulties faced by institutions, the lack of integration with other agencies is cited, as is the lack of destination sites to send the animals.

Tortoise (Geochelone sp) - Photo: **André Camilli Dias**

When dealing with wildlife, everythings lacking

PRECARIOUS INSTITUTIONAL STRUCTURE – Overall, there is a lack of criteria for dealing with wildlife by the agencies responsible for this environmental heritage, worsened by the apparent lack of support by the Federal and State governments.

The enforcement agencies do not possess sufficient human and material resources, and the staff, in their majority, are not prepared to work with wildlife. The way in which the questionnaires were filled greatly atests to this situation.

During the process of obtaining the questionnaire data, it became evident the precariousness of some sectors responsible for wildlife. No agency could reply within the requested deadline. Two of the IBAMA superintendencies, that of Rio de Janeiro, and of Minas Gerais, did not reply. In telephone calls, staff alleged reasons such as: lack of personnel, lack of a computerized system to supply data, lack of time, lack of systematic organisation in enforcement work.

Blue-and-Yellow Macaw *(Ara ararauna)* - Photo: **Roni Celestino**

On the other hand, there lacks deposit sites for the animals, which represents a serious barrier for enforcement – in this aspect, it is important to note that the Federal Decree 3.179/99, which oversaw the Environmental Crimes law (Federal Law 9.605/98), prioritizes the release of animals seized by enforcement; but the Federal Government and State governments, for the most part remain unprepared in addressing the referred legislation, given that wildlife releases require supporting infrastructure and rather rigorous technical criteria.

ENFORCEMENT DOES NOT ACT; IT REACTS - In some states, the low number of infractions issued reflects the little prioritization of wildlife enforcement.

It also became clear that enforcement is mostly driven by tip-offs. In the State of Espírito Santo, households are highlighted as targets of greatest importance among those places where most wildlife are apprehended.

LACK OF SPECIALISED STAFF – If the IBAMA superintendencies and the Environmental Police portray great structural difficulties, these agencies will unlikely possess trained technicians to manage and allocate the animals seized. Evidence of the absence of such professionals is the lack of species identification for specimens seized, observed throughout the various questionnaires.

Owl Butterfly *(Caligo spp.)* - Photo: **Vincent Kurt Lo**

FREEDOM OR CAPTIVITY: HOW TO DECIDE? - If trained technicians do not exist to manage the wildlife, one assumes that there are flaws in the criteria adopted for releases. The data regarding the allocation of seized animals still shows a lack of standardization by the Federal IBAMA for destination sites.

In the topic item for destinations, the IBAMA of the State of São Paulo allocates 70% of animals seized to breeding centers - a highly elevated rate if compared to the numbers for other states. Despite this destination not being a priority established by law, the technicians of IBAMA admit that the governance of conservation breeding centers, and aboveall, those that have commercial purposes is quite complex. Thus, animals confiscated from illegal trade and officially deposited can end up in centers housing stocks where 'unregulated' animals are also present.

CRIME AND LEGALITY, A VICIOUS CIRCLE - In general, the animals most seized belong to species historically present in households, victims of illegal removal from nature. These same species, currently, can be acquired legally, as well as others which are becoming "fashionable". It is worthwhile remembering that the almost indiscriminate liberalization of species that can be bred for commercial purposes was largely justified by IBAMA as a form of "containing the illegal trade in wildlife". However, despite the fad that led to the expansion of this specialised trade, which uses as propaganda the 'legality' of their animals, the high number of seizures point to an intensification of trafficking.

CAPTURE, SMUGGLING, SALES. ONLY PLANNED ACTION CAN BE EFFECTIVE – IBAMA and the Environmental Police of most states are unaware of the main sites for capturing wildlife, details on the main smuggling routes, as well as their vending sites. Such information is absolutely essential for these agencies to able to plan their actions and truly curb the removal of animals from the wild. Yet the absence of such data throughout most questionnaires gives reason to believe that there exists no intelligence work guiding these enforcement actions.

Tapir *(Tapirus terrestris)* - Photo: **O Globo**

Iguana *(Iguana iguana)* - Photo: **Roni Celestino**

Citing, for example, "highways", without specifying which these are does not add to the creation of a map of these routes. Even when specifying the highway, the most likely sites are not cited and this is even more serious in the case of federal highways that cut across states. As with the smuggling routes, knowing the sites of capture and vending is essential in planning against the wildlife trade.

While trafficking intensely proceeds forward, the enforcement agencies only react, instigated by tip-offs from the population.

MORTALITY INDICES DIVERGE – the loss of animals in seizures is the item that generates most contradictory responses in the questionnaire, varying from 22% in Bahia to 0.51% in São Paulo (Environmental Police). Admittedly conditions for the São Paulo Environmental Police are better compared to those police of most states; yet such a large discrepancy is unjustified, mainly because there are greater levels of losses in the animals' state of origin than in the state where the sale occurs (São Paulo).

Frog (*Hypsiboas albomarginatus*) - Photo: **Zig Koch**

5

WORKSHOP

The workshop aimed at consolidating the Diagnosis of Wildlife Trafficking in the Central and Serra do Mar Corridors of the Atlantic Forest. The workshop brought up in a rather realistic manner, the precarious situation of official agencies responsible for the Brazilian fauna. In combining all the difficulties of integration between the various fora, shows the urgency in which the government, at all levels, needs to assume its responsibilities in managing this resource and strengthen institutional structures.

Dragonfly - Photo: **Paulo J. Celestino**

Amid such difficulties, how to protect wildlife?

The workshop held in São Paulo, November 30th to December 1st 2006, brought together representatives of the Ministry of Environment, IBAMA, the Federal, Highway, and Environmental Military Police, the Federal and State Public Ministry, state and municipal secretariats of Environment, universities, institutes, and NGOs. The participants were divided in two work groups - Central Corridor and Serra do Mar - and tackled exhaustively the questions aimed at clearing doubts that arose during the project, explaining the shortcomings of the questionnaires, and elaborating the basis of a Strategic Plan to Combat Wildlife Trafficking in the Atlantic Forest Biodiversity Corridors.

The project coordinators presented the groups a single text containing 30 questions. After having worked separately, the participants were reunited in plenary to consolidate their results.

The responses from the working groups, expanded by contributions from the plenary, resulted in a revealing document which is available in its entirety.

It shoud be noted that not all questions generated debate or input during the plenary.

Amid such difficulties, how to protect wildlife?

1 What were the factors that hindered the provision of the information requested in the questionnaire? Are there any possibilities of obtaining specific information from the Atlantic Forest corridor Areas?

SERRA DO MAR CORRIDOR

The first difficulty pointed out by the environmental agencies, Military Police, IBAMA, Federal Highway Police, was the inexistence of a database that gathers the information requested. Also it was alleged that there was little time to consult the archives for copies of infraction notices, which generally form piles of paper.

It was highlighted the risk of creating yet another data system, without the necessary supporting infrastructure (equipment and manpower) in place to release the data.

The lack of technicians in sufficient number to identify the animals seized has hampered the collection of more precise data on species and their correct identification.

Among suggested solutions, there are: a) seeking partnership for digitizing data contained during operations relating to wildlife, b) centralize and systematize data derived from operations.

CENTRAL CORRIDOR

A questionnaire with fixed questions for the different forms of action against wildlife trade; a lack of software and personnel to compile the data. Moreover, this same should be answered by the police in conjunction with IBAMA, and there lacked prior training for filling the questionnaire. Yes, the possibility for obtaining focussed information is possible through the partner institutions of the Ecological Corridors Project, if incorporating more involved stakeholders.

PLENARY

It was reaffirmed the importance of a computerized database concerning fines issued by the enforcement agencies, which would facilitate the search for any information concerning, for example, the repression of wildlife crimes. Coordinators of the Diagnosis project recalled that, during the workshop a database was presented that met the demands regarding wildlife, and staff from the institutions were trained to operate the system.

2 Which Factors guide Enforcement actions involving wildlife?

SERRA DO MAR CORRIDOR

The sorties are, in their majority, reactive, addressing the tip-offs raised by the population. The Military Police of Minas Gerais affirmed that intelligence operations are undertaken, but few.

Buffy-tufted Marmoset *(Callithryx aurita)* - Photo: **André Camilli Dias**

CENTRAL CORRIDOR

The tip-offs and demand provoked by seasonality brought forth by tourism, festive period, or the breeding season of wildlife.

PLENARY

Proposal for intelligence work within and between agencies involved in the repression of the wildlife trade (some agencies, like the Federal Police, are more prepared to act alone or jointly with others; but this preparation should be extended to all those involved).

3 In an enforcement operation, which are the agencies involved in the different stages and what are their duties? Do doubts arise as to the competence and/or assignments of the different institutions?

SERRA DO MAR CORRIDOR

The IBAMA of Minas Gerais reported the absence of a specific norm at the state-level which regulates enforcement (policing) and the fixing of fines.

No doubt was voiced regarding the competencies of the various agencies.

The Municipality of São Paulo is preparing itself to act jointly in enforcement, through the Green and Environment Secretary.

Dr. Vinicius Leal Cavalleiro, state prosecutor for Rio de Janeiro, gave an explanation about the division of competencies among the entities members of SISNAMA.

CENTRAL CORRIDOR

In Bahia, for tip-offs, verifications and operations those who act are: IBAMA, OEMAs, OMMA and the police. Whereas in Espírito Santo, municipal agencies do not act.

Public Ministry: tip-offs, administrative proceedings, civil and criminal. Doubts about the situation in Espírito Santo are minimized by specific duties under the Federative Pact. In Bahia, there is conflict over isolated actions, and towards the competencies of the Civil Police and the state and municipal environmental agencies.

PLENARY

It was highlighted that the administrative agencies seem more committed in carrying out environmental licensing for construction sites than in combating illicit acts against wildlife.

4 How well has been the role of the Federal Police and Civil Police in repressing the wildlife trade?

SERRA DO MAR CORRIDOR

The Federal Police carries out annual enforcement operations, like the 'Compass Rose' and other intelligence activities, including dealing with international trafficking issues.

The Civil Police was not represented at the meeting. (*)

* It was invited but did not send a representative.

CENTRAL CORRIDOR

The Civil Police has poor performance due to the lack of training and instrumentation, low capacity, disinterest in environmental crimes. The Federal Police is effective in investigating environmental crimes as well as implementing specific actions against these same.

PLENARY

The involvement of the Civil Police is proposed employing police academies as intermediaries to instruct graduating police chiefs. One of the paths suggested was provoking the secretariats of Public Security to enable this change. In the Federal Police, the need to work on wildlife was already incorporated into the precincts dealing with environmental crimes.

The importance of the document generated from the workshop discussions was reaffirmed, so that each agency involved can demand actions be taken concerning their duties to environmental crimes. Example: The Public Ministry should demand action against environmental crimes. Lastly, the document generated by the project should be used strategically by the workshop participants with aim to implement the proposals herein contained.

It was highlighted the need for financial structuring and staffing to make training activities feasible.

5 What are the problems faced when enforcement activities result in a large number of animals seized?

SERRA DO MAR CORRIDOR

Among the problems cited there are: a) the limited number of CETAS; b) difficulties in adequately reallocating the animals seized; c) absence of veterinary support for the animals seized; d) difficulty in managing the animals between their seizure and final destination; e) the great number of proceedings generated with each operation.

Among the solutions suggested: implementation of ASAS projects (Portuguese acronym for Release Areas of Wildlife), by IBAMA, and the ASM project – Areas of Release and Monitoring, by IBAMA of São Paulo.

CENTRAL CORRIDOR

Prosecuting the offenders in the precinct (lack of precinct structure) and the lack of destination sites for seized animals (ex: Offenders being custodians and the death of seized animals because of a lack of infrastructure for receiving these).

PLENARY

This item caused much debate, especially because the day before (November 30th, 2006), CONAMA approved the Resolution on the Terms of Domestic Custody of Wildlife.

The custody of the seized animal staying with the offender, allowed by the Decree 3.179/99, already generates huge controversy, since by allowing this possibility, the above decree added measures unforeseen in the Law which it regulates (Federal Law 9.605/98). Theoretically, therefore, when an animal is left with the offender, an unlawful act is committed - a conduct not anticipated in law.

With the new resolution from CONAMA, the practice should become commonplace, generating criticism from state defenders present, NGO representatives and even from IBAMA's own servants.

Amid such difficulties, how to protect wildlife?

The majority made evident the fear that the "domestic custody" would futher stimulate the removal of animals from the wild and produce an antithesis effect on environmental educational.

The Chief coordinator of RENCTAS, Dener Giovanini, spoke out strongly against the adoption of the Resolution for Granting Custody to Wildlife, and intends to appeal to the Public Ministry against the measure. One of the points raised was the fact that even experienced technicians from IBAMA across Brazil had opposed the measure, which was not enough for the leadership of IBAMA to retreat in its intent of bestowing wildlife indiscriminately to so-called 'domestic custodians'. For the coordinator of RENCTAS, the measure can stimulate the removal of wildlife from nature. Even so, throughout the entire discussion process of the resolution, RENCTAS tried to stop its approval, including appealing to the Minister of Environment, an authority opposing the domestic custody. Now the hope is that the courts bar this measure considered illegal and unconstitutional.

A technician of IBAMA from São Paulo mentioned that "it is necessary to think about conservation rather than the individual", therefore there is no sense in defending the domestic custody under the banner of well-being of possibly one or two animals when this practice can stimate the removal of individuals from nature, compromising the conservation of entire species. It was also stressed that the alleged "well-being" of an animal under domestic captivity does not exist; generally they suffer from inadequate husbandry, improper enclosures and wrong diets. The maintenance of some wildlife species in captivity is almost impossible, leading to their deaths. Another issue remembered was the risk of transmission of zoonoses, since many wildlife diseases remain undocumented.

It was once again stressed the need to build more CETAS, but this will not resolve the problem, given that the removal of animals from the wild should be suppressed at the source. On the other hand, the increase in number of CETAS could be made possible by the government, as along as private-sector stakeholders are excluded where the latter's interests could divert the purpose of this wildlife facility given the government's limited control.

6 Does technical support exist for identifying the species and assessing the state of health of animals seized? Who provides this support? What is the procedure adopted in the case of sick, injured animals or those needing immediate help?

SERRA DO MAR CORRIDOR

In Minas Gerais, this is a loss. In Rio de Janeiro, there exists a technical corps in the environmental battalion. The Federal Police has its own technical staff. The Civil Police and the other battalions have no technical staff of their own.

It was suggested the use of volunteer IBAMA environmental officers in supporting more immediate enforcement activities; this proved impossible in the face of existing legislative barriers.

Signing agreements with scientific entities, equipping the enforcement agencies (hiring of technicians), capacity building of military police by IBAMA, apart from partnerships with municipalities and their Environment secretaries.

CENTRAL CORRIDOR

The species identification is done by the enforcement team which have the pratical experience and knowledge of the most common species. When there is an environmental analyst, vet/biologist present they provide assistance to IBAMA's enforcement. Eventually in the absence of technicians, assistence comes from teaching/research institutions, environmental NGOs, and zoos. Regarding the health status, measures are restricted to CETAS but done in a superficial and precarious manner, requiring costs for exams and qualified personnel.

PLENARY

It became evident that everyone needed to be trained in all the agencies. Agreements were suggested with research institutes and universities for training of environmental officers to take place. It was also suggested the preparation of reference materials with the inclusion of a specialized bibliography.

7 Do criteria exist for the allocation of animals seized? If so, which? Under which circumstances were these criteria established?

SERRA DO MAR CORRIDOR

Criteria exist set by the Federal Law 9.605 and by the Federal Decree 3.179, however, it was found that there is a need for regulating planned allocations. IBAMA informed that there is a normative instrument being prepared on the subject.

CENTRAL CORRIDOR

Yes, the legislation itself, being CETAS (in practice) the main destination of animals in both Espírito Santo, and Bahia; or alternatively releases when animals in good health and when native to the region where they were found (Environmental Police of Bahia). Nevertheless, there is a scarcity of CETAS units in the two states, exacerbated by the constant increase in the number of animals seized.

Short-tailed opossums - Photo: **O Globo**

PLENARY

It was observed that some institutions do not adhere to the Legislation, since releases are not prioritized nor the forwarding to CETAS; the de facto allocation priority rests with breeding centers, generally, commercial.

8 What is the average length of stay for animals under the responsability of enforcement agents until their final destination?

Serra do Mar Corridor

IBAMA informed that the animals stay on average less than 12 hours with enforcement, except on weekends when there is no one on duty.

Central Corridor

For IBAMA of Espírito Santo, allocation is immediate or within 4 hours, because of the lack of infrastructure to maintain such animals. In the case of the Environmental Police of this same state, the stay is up to 5 days (through transit pens), unless the animal is in poor health. In Bahia, both for the Environmental Police as for IBAMA, the average is up to 4 hours for metropolitan areas; however, in the State's interior this can vary from 2 to 8 days before allocating seized animals. It is important to stress that one fails to respond to other occurrences, of equal urgency, in order to dispatch as quickly as possible such animals and therein the need for a specialised allocation structure (CETAS, vehicles, and staff).

Oncilla (*Leopardus tigrinus*) - Photo: **André Camilli Dias**

9 Do reception centers for seized animals exist? Specify numbers and to which institution these belong.

SERRA DO MAR CORRIDOR

IBAMA has four CETAS in Minas Gerais; four in São Paulo; and one in Rio de Janeiro. Other unrelated/non-governmental institutions exist.

CENTRAL CORRIDOR

Espírito Santo has access to a CETAS (Cereias), which is the main destination of more than 90% of seized fauna - an emergency room for wild animals which serves the northern region of the State (FLONA Rio Preto, in Pinheiros) and a Rehabilitation Center for Injured wildlife in Itaúnas (municipality of Conceição da Barra). In Bahia, there is a functioning CETAS in Vitória da Conquista and another in Salvador; besides another, in construction, in Porto Seguro. Outside the Central Corridor area, there are another three CETAS in their construction phase: in Barreiras, Sobradinho, and Paulo Afonso.

Amid such difficulties, how to protect wildlife?

10 Does Ibama keep track of the animals sent off and which institutions received them?

SERRA DO MAR CORRIDOR

Yes.

CENTRAL CORRIDOR

Yes, regarding the CETAS, however, physical checks are not carried out in the case of breeding centers and custodians (only as part of notarial registration).

PLENARY

It was noted that checks are not carried out on the animals, but only on their documentation. This means, an animal is deposited but can become replaced by another of the same species, given that practically no tagging system is employed. The tracking of the animal is very complicated in most states.

11 Define the possibility where an offender remains with the animals after an operation?

SERRA DO MAR CORRIDOR

When the referral to the Federal Decree 3.179/99 is observed; a measure that is not synchronous with the Federal Law 9.605/98, regulated by this decree; the situation needs to be revised.

CENTRAL CORRIDOR

Through operational circumstances, when it is determined the inability of allocating animals to the other above-mentioned destinations (release, CETAS, breeding centers, etc).

PLENARY

Again it was recalled that the keeping of a seized animal with the offender, allowed for by Federal Decree 3.179/99, can be considered illegal, since this conduct does not exist in the law that this Decree serves to regulate - Federal Law 9.605/98, the Law of Environmental Crimes. Theoretically, therefore when an animal is left with the offender, an illegality is commited - measure not foreseen by law.

12 In the case of immediate releases, what are the technical criteria adopted and who takes responsibility for the procedure?

SERRA DO MAR CORRIDOR

Only animals found in traps within the remit areas are released.

CENTRAL CORRIDOR

The criterion is superficial and empirical, based on the apparent state of health and tameness of the animal. In the case of IBAMA, the responsibility rests with the enforcement team; as for the Environmental Police, the responsibility for releases rests with no one. There are yet unrecorded seizures which result in indiscriminate releases (ex: in Bahia, there is the indiscriminated release of animals hailing from street markets by the municipal secretaries of environment).

PLENARY

It was observed that the information from the Serra do Mar group (immediate release only for animals found in traps), apparently, does not correspond with data presented in the table 'Overview of Questionnaires sent to the Environmental Police and IBAMA' since the rates of release for the states are high. Additionally, the vast majority of animals rescued hail from trafficking and not from being found in traps. It was recalled that, before the difficulties of species identification by enforcement teams, immediate releases are not to be recommend. Unless the animal is proved to have been recently entrapped.

13 What is the fate of animals that die during the enforcement process? How to explain the large difference among mortality rates?

SERRA DO MAR CORRIDOR

The animal that dies is registered and is only stored in a freezer by judicial order and in cases of environmental disasters.

CENTRAL CORRIDOR

In Espírito Santo, it is registered in a book by the corporation itself, contrary to the Environmental Police of Bahia who does not do this type of recordkeeping. The dead animals are delivered to the CETAS, by the Environmental Police and by IBAMA. In Espírito Santo the Environmental Police and IBAMA, carcasses are directed to teaching / research institutes for autopsy and taxidermy, or sent for incineration. The difference can be explained by the deaths having been catalogued in units different to each other. In the case of Bahia, due to the large territorial space of the State to allocate animals seized.

PLENARY

It was indicated that the carcasses would be better used by universities, reducing the need to capture animals in the wild.

And it was highligthed that: "on a national scale, the difference between the number of animals seized and sent to the CETAS often fall within the range of thousands". The database would give an exact sense of what happened with the animals seized until their final destination.

The investment in staff training and infrastructure contributed towards the reduction in the mortality rates of animals.

Green-billed Toucane *(Ramphastos dicolorus)* - Photo: **Funpeb**

14 Do the agencies employ intelligence work to guide actions in combating the wildlife trade or do these happen only in the face of tip-offs?

SERRA DO MAR CORRIDOR

The rule is act reactively. Few actions are planned.

CENTRAL CORRIDOR

Environmental Police/BA: none for environmental crimes. Environmental Police/ES: intelligence work exists poaching and trafficking, in conjunction with the Federal Police, but it is not used routinely. IBAMA/ BA: counts with the support of a special investigations core team for environmental crimes in Brasília, however this is incipient and sporadic. IBAMA/ES: no intelligence work exists, only in tip-off investigations.

PLENARY

It was suggested to carry out enforcement actions that are integrated, involving all the agencies, concomitantly.

Amid such difficulties, how to protect wildlife?

15 The difficulty of enforcement at Federal highways was pointed out in the Questionnaire. What is the role of the highway police in repressing the wildlife trade? Do they routinely act against this crime?

SERRA DO MAR CORRIDOR

The Federal Highway Police allocates 10% of its time towards fighting environmental crimes. There exists a module on environmental law in the police training course, and some partnership initiatives for broader environmental training.

The state highway police does not have the jurisdiction to routinely enforce federal highways. Only by prior arrangement.

CENTRAL CORRIDOR

IBAMA and Environmental Police of Bahia affirm that the Federal Highway Police and the State Highway Police do satisfactory work, seizing and recording infractions. IBAMA and the Environmental Police of Espírito Santo say that they do not have partnerships with the Federal Highway Police; in the case of the State Highway Police, this partnership does not take place, given that, as claimed, trafficking is more present on federal highways.

PLENARY

It was highlighted the prohibition of state police to act in federal highways without the permission of the Federal Highway Police in the Central Corridor region.

The lack of support among the institutions was stressed; often they still act by exchanging duties. The representative of the Public Ministry of Bahia recalled that the repression against wildlife trade should be done by being "on the ground" and not by being "on paperwork".

16 How Effective has the federal police been repressing wildlife trade in the states in question?

SERRA DO MAR CORRIDOR

The Federal Police carries out yearly enforcement operations, like the 'Compass Rose', and other intelligence work, including addressing international wildlife trade.

CENTRAL CORRIDOR

At the precinct specialised in environment issues of the Federal Police/ BA, there happens timely work and of high profile (in the last three months, it operated under own accord, without the need of IBAMA in forwarding instructions). In Espírito Santo, actions like 'Operation Wind Rose' (June/05) and 'Operation Wild' (October/06) are valued and timely work.

17 what should be improved in the structure of agencies?

SERRA DO MAR CORRIDOR

Suggestion: dissemination of training to the municipal secretaries of Environment.

CENTRAL CORRIDOR

Everything: integreation among public agencies; resources for equipment, infra-structure, physical space, screening centers; staff, training and governmental support (public policy targetting the trafficking of animals, in this case).

PLENARY

It was suggested incorporating aspects concerning the control of wildlife trafficking in the national program for training environmental managers of the Ministry of Environment.

It was highlighted the possibility of dialogue with ANAMMA - National Association of Municipal Agencies of the Environment - and with OEMA - State Environment Agencies.

Amid such difficulties, how to protect wildlife?

18 When responding on the difficulties faced, most pointed out a lack of almost everything, but without citing the lack of government support. If so, how can these difficulties be justified?

SERRA DO MAR CORRIDOR

Normally institutional support exists, yet without governmental support.

CENTRAL CORRIDOR

No public policies exist for environmental management, being wildlife the most overlooked within environmental matters.

Black-throated Saltator *(Saltator atricollis)* - Photo: **Vincent Kurt Lo**

Amid such difficulties, how to protect wildlife?

19 An issue frequently reported was the lack of integration between institutions. How does this reflect in the fight against wildlife trade? How to integrate the institutions?

SERRA DO MAR CORRIDOR

Creation of inter-institutional study groups, setting up of meetings, scheduling of joint actions, and creation of a permanent task force.

The wildlife trade is organized, and the enforcement agencies are not.

Enhancing interpersonal contacts had previously been demonstrated to be more effective than imposing top-down agreements.

Examples of successful integrated actions: Correios (Postal service) and IBAMA of São Paulo; and environmental agencies of Rio de Janeiro.

CENTRAL CORRIDOR

Isolated actions reflect low effectiveness, there are conflicts in jurisdictions, and unawareness of the results of other institution's actions. Integration can be carried out through joint training and exchange of experiences among institutions, besides other measures.

20 How do state and municipal agencies members of Sisnama contribute in combating the wildlife trade?

SERRA DO MAR CORRIDOR

Very little.

CENTRAL CORRIDOR

In Bahia, the municipal and state secretaries show disinterest towards the topic, and specific actions do not exist. The same happens in the municipal secretaries of Espírito Santo. In this state, the State secretary promotes educational activities against wildlife trafficking, forwarding of tip-offs, participatory planning process (work group for wildlife management jointly with other institutions), and is responsible for the state coordination of the Ecological Corridors project by the Ministry of Environment.

21 Which are the barriers in legislation and how to face them?

SERRA DO MAR CORRIDOR

Many barriers; among the suggestions:

Correction of the terms of the Federal Decree 3.179/99, concerning the allocation of wildlife.

Regulations for breeding of animals purchased with a fiscal invoice.

Creation of centers of intelligence and agreements with research and management entities, official and private.

Create a specific criminal offense, establish criteria regarding trafficking.

Improve the control over live-feed centers, since these animals serve as food for both legalized animals, as those hailing from the wildlife trade.

Create legal categories (penal and administrative) to protect against exotic species being introduced into Brazil, by providing a penal category for the inadequate and/or irregular use of the animal and creating control mechanisms over the use and exhibition of exotic species. Furthermore, the creation of a national registry, which should be initiated with a census of the animals already introduced into Brazil.

CENTRAL CORRIDOR

Create a legal category specific for the trafficking of wildlife, so as to not receive the same treatment as minor offense crimes.

PLENARY

The position raised by the groups reiterated the pressing need to criminally typify the wildlife trade, in order to avoid that this criminal activity benefits from the Federal Law 9.099 (Law of the Special Criminal Court). The much-discussed wildlife trade, according to state justice defendants, does not exist in Brazil, since it is not typified by law.

Moreover the possibility was raised of establishing a honorary delegation at the administrative level, for persons who contributed in the identification of animal traffickers.

It was clear that generally state and municipal agencies operate only under agreements with IBAMA; but at both instances, either can act on their own behalf by simply having the relevant legislations in place.

Amid such difficulties, how to protect wildlife?

It was suggested to revive, together with CONAMA, the Draft Law on Wildlife Protection elaborated years ago with contributions from lawyers and environmentalists across Brazil, under the coordination of the state OABs, to substitute the Federal Law 5.197/67. This draft failed to reach the National Congress, since at the time, IBAMA officials alleged that Brazil would gain the Law on Environmental Crimes (as indeed happened) but without considering wildlife in a comprehensive manner as was expected for this latter draft law.

22 One State IBAMA agency showed the existence of a large number of animals spontaneously donated by the population. Does this occur in all states? Are illegal animals bought from breeders, or from shops registered by IBAMA? What is the fate of these same?

SERRA DO MAR CORRIDOR

It occurs in all states, but there is no recordkeeping as for the origin of the animals.

Their allocation has mostly been to the CETAS, which does not prove ideal, but is required.

CENTRAL CORRIDOR

In Bahia, spontaneous donations do not happen in great number; contrary to Espírito Santo, where the habit exists. In general, for both the states, these are illegal animals, forwarded mainly to the CETAS.

Butterfly - Photo: **Roni Celestino**

23 The questionnaires revealed that many species listed as the most trafficked are also the most sold legally. Does this occur in all states? How to explain this?

SERRA DO MAR CORRIDOR

The IBAMA of Brasília informed that the rule has been to find irregularities in commercial breeders. Experience has demonstrated that commercial breeders and amateurs have not contributed to the reduction in captures; they have served as entrepots for trade, "warming-up" young animals, falsifying documentation and tags.

It was stressed that some wildlife do not allow for management, as they do not breed in captivity, like the green-billed toucan, or the green-winged saltator.

Solutions suggested faced with the difficulty of extinguishing breeders and allocating the animals: a) better control over commercial and amateur breeders; b) creation of a bank with genetic samples.

CENTRAL CORRIDOR

With the legalization of trade, the expected trend is a reduction in trafficking; but the opposite happened. This situation can be attributed to the lack of enforcement on commercial breeders: 20,000 amateur breeders are enforced by seven IBAMA technicians and by six wildlife officials in Espírito Santo. What happens is the "warming-up" of wild animals in breeding centers.

24 How does the fragmentation of the biome influence the wildlife trade?

SERRA DO MAR CORRIDOR

No such data is available.

CENTRAL CORRIDOR

Fragmentation allows for greater greed for animal species, turning the fauna more susceptible due to the easier access of people into the biome. With fragmentation, animals end up leaving their *habitat* in search of new spaces. That is, the more fragmented a biome, the harder it is to preserve its fauna.

25 Does The connection of corridors help avoid the removal of animals from the wild? Cite examples.

SERRA DO MAR CORRIDOR

No such data is available.

CENTRAL CORRIDOR

It avoids their removal as long as there is effective monitoring and enforcement in the corridor areas, and an awareness from landowners in the areas surrounding the biodiversity corridors.

26 Cite Research projects focused on species from the Atlantic forest involved in wildlife trade. Do research projects exist involving non-endangered trafficked species? Which?

SERRA DO MAR CORRIDOR

Research projects were cited for sloth and golden lion tamarins. The IBAMA of São Paulo, in agreement with UNESP, is developing projects aimed at creating a database for paternity testing of animals in captivity. There are issues regarding the high costs of the project.

The CETAS-RJ has an agreement with the UFRRJ (Federal Rural University of Rio de Janeiro) for the development of handling and research protocols concerning the confiscating of animals from wildlife trade.

CENTRAL CORRIDOR

The IBAMA/ES has partnership with the University of Vila Velha in research involving bird and mammal diseases and their impacts on future releases. Research exists by the Alliance for the Atlantic Forest (Conservation International and SOS Mata Atlântica) on the yellow-breasted capuchin, golden-headed lion tamarin, curassows, white-breasted tapaculo, muriquis, red-browed amazon, involving the following institutions: IPEMA, IESB, UESC and Idéia Ambiental.

Six-banded Armadillo (*Euphractus sexcinctus*) -Photo: **Vincent Kurt Lo**

27 How does the Public ministry act in combating the wildlife trade and in the conservation of the Atlantic forest, in the five states involved in the project?

SERRA DO MAR CORRIDOR

In São Paulo, the State Public Ministry has been working proactively in protecting the Atlantic Forest preservation areas, however, there is no specific work on wildlife protection or against wildlife trade.

In Rio de Janeiro, the State Public Ministry, through centers, promotes citizen rights but addresses only civil liability issues, hence there is no pro-active program for combating wildlife trade at the penal front, due to the absence of data on the environmental damages caused by this. Projects in compensation-claims against deforestation were cited.

In Minas Gerais, as in other states, there is intense action in the conservation of the Atlantic Forest, but as for the wildlife trade there is no such action. Regarding the upkeep of animals in captivity, a project called Birds was developed.

The national prosecutor for São Paulo made efforts to draw up a spreadsheet of costs of returning animals to the wild, alongside IBAMA. The Public Ministry signed a term for technical cooperation with FUNBIO (Brazilian Fund for Biodiversity) to allocate resources towards wildlife.

The state defendants suggested:

1) the creation of a specific penal category for wildlife trafficking, with rites outside the Special Court;

2) the creation of a virtual study group via the internet to form a database on the performance of environmental defendants and of environmental agencies; and

3) demand of municipalities a more intense enforcement of street-markets, with multiple administrative irregularities and tied to other crimes.

CENTRAL CORRIDOR

The Public Ministry for the state of Bahia exercises isolated works, seeing as each defendant acts on their own accord; it is possible that in the next year the training of a specialised group to combat the wildlife trade will take place. They will act as the intelligence hub of the Public Ministry in the state, and of an investigations group against organized crime; besides there existing a defendant for matters specific to the Atlantic Forest, and for the transferal of resources by the Ecological Corridors Project via formal agreements.

The Public Ministry of Espírito Santo carries out isolated actions with the Support Center for the Environment, besides the creation in 2006 of an environmental group that will work in conjunction with a repression group against organized crime (there is no special group for wildlife trade).

28 Article 2º, § 6º, Section X, of the Decree 3.179, of september 21st, 1999, which regulated the law 9.605, of February 12th 1998, determines that the copies of infraction notices involving animals, products, and by-products be delivered to the Public Ministry. Is this measure being fulfilled? And what is the referral given by the institution?

SERRA DO MAR CORRIDOR

Referrals are forwarded to the Public Ministry secretaries, both at state and federal levels, depending on the crime, following the procedures on how to pass along information on enforcement and administration, with exception of action developed jointly by other agencies.

CENTRAL CORRIDOR

Yes, referrals are the direct result of criminal complaints, sent in to court (minor offenses) and, when there is sufficient evidence to the complaint, these are forwarded to the precinct, to open investigations and, ultimately, civil lawsuits.

29 How does the Public Ministry and federal Police Regard the creation of the database?

SERRA DO MAR CORRIDOR

The Federal Police has restrictions on sharing data with private entities.

The Public Ministry understands that there should be unification, but via a public entity of the various agencies of SISNAMA to share and cross-reference data.

CENTRAL CORRIDOR

The creation of this database is considered by the Public Ministry of fundamental importance in the fight against wildlife trafficking (favorable).

30 Who should be responsible for managing the database; which institutions show feed it input and who may have access to information?

SERRA DO MAR CORRIDOR

IBAMA would be the most appropriate agency to manage the data, because it has a national remit.

CENTRAL CORRIDOR

The management could be done by RENCTAS, in partnership with the Ministry of Environment. All partner institutions for the database project would provide input.

The access to strategic data would be guaranteed, broadly to the input agencies; and more restrictedly (with filters), to the general public.

PLENARY

The importance of the database was recognized as an information governance tool on illicit acts against fauna, but doubts remained regarding which institution should assume its management. IBAMA admits to taking responsibility provided that there is standardization (for example a resolution coming from CONAMA) and believes that all the agencies of SISNAMA are potential data input institutions for the database.

As for proposals to have the database managed by RENCTAS and the Ministry of Environment, a correction was given that this falls not under the Ministry, but on IBAMA, which is the executing branch of the Ministry on the National Policy on Environment.

IBAMA affirmed that the implementation of the database would mean more work for its technicians, who already input data into other databases (SIFISC and SICAF), and also raised the issue of the

possibility of duplication of data between these databases, even if only concerning illicit acts commited against wildlife. Technicians responsible for creating the system reported that the database, created for wildlife, was designed to allow the exchange of data with other systems. It was also stressed that only some fields would be duplicated since the system was made to recieved and house information that does not exist in other databases.

About the confidentiality of data, it was highlighted by the Public Ministry that "all public acts are public". Moreover, the database can only be accessed by authorized agents through passwords. In the case of, for example, a data search for animals most seized there should be a way to obtain such information without the names of offenders appearing.

Lastly, it was recalled that the effective use of this database is important to consolidate a pilot project that is, and may in future, be extended across the country.

The group voiced their concern regarding the limited space that wildlife themes earn in official environmental education campaigns. Campaigns with educational information regarding the inconveniences of keeping wildlife in captivity should be made viable. Futher suggested that the theme be prioritized creating a National Council on Fauna.

SERRA DO MAR CORRIDOR GROUP

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CENTRAL CORRIDOR GROUP

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6

DATABASE

Among the tools to support the work of official institutions working in wildlife topics, embedded in the website *www.diagnostico.org.br*, one finds a database, tailored specifically for enforcement agencies, with password restricted access. In this chapter, we detail the discussions around this database, the tools available, and legalities concerning the duties of IBAMA as executioner of the National Policy on Environment.

Lizard *(Enyalius sp)* - Photo: **Armando Catunda**

Maned Wolf *(Chrysocyon brachyurus)* - Photo: **Paulo J. Celestino**

Instruments are fundamental

The inexistence of computerized systems and databases which gather information concerning the official figures on wildlife trafficking in Brazil, and the fight against this criminal practice, has disastrous consequences for the conservation and preservation of wildlife. Without precise data on; areas where major occurrences are concentrated, species most victimized, identification of people involved in the activity across various states, then enforcement falters. Futhermore, intelligence operations can become compromised, hampering the work of enforcement agents, police, and even the Public Ministry. The lack of information also undermines government projects, and that of NGOs, focussed on areas of greater risk for certain species.

Precise information, a powerful weapon.

The database was built from contributions by all partners involved in the project through successive workshops held in the five participating states and the Federal District, during the execution of the *Diagnosis of Wildlife Trafficking in the Central and Serra do Mar Corridors of the Atlantic Forect and the Implications of this Activity to the Conservation of the Biome* project, as detailed in Chapter 1.

The use of this tool will enable institutions to have an updated overview of crimes commited against wildlife such as: animal harvesting sites in the wild, species targetted by smugglers and poachers, main smuggling routes, vending sites, people illegally involved, etc. For this, the database must be fed from data on infractions involving wildlife.

Properly supplied, the database will display in detail the predatory action of man on the fauna of the Atlantic Forest's protected areas, and thereby pinpoint the more critical areas and those which are conservation priorities; besides providing more assistance for planning the connection of fragmented areas, and the insertion of corridors.

This database is essential, not only for countering the wildlife trade, conservation of species in critical areas, and implenting corridors; but also to aid the action of institutions like the Public Ministry, Justice system, Federal and Civil Police forces, who would obtain a password to access the information.

Due to the methodology used to build the database, the tool was only completed in July of 2006, but it is yet not being utilized due to the questioning by official agencies about which agency should be entitled with its administration.

During the Workshop held in São Paulo, a representative of IBAMA and one for the Environmental Police of each of the five states, plus a representative of IBAMA from the Federal District, were trained to feed input and use the database.

ADMINISTRATION, THE BOTTLENECK OF THE DEBATES

In discussions held between the two working groups – Central Corridor and Serra do Mar Corridor – as well as in the Plenary debates, a decision was not reached on which institution would be responsible for administering the Database. Lastly, some voices were raised appointing IBAMA as the ideal administrator. It is also necessary to define the corresponding level of access for each institution (administer the database, input state information, consult records, issuing reports etc).

Representatives of the Public Ministry for the states emcompassing the Central Corridor classified the creation of the database as essential to the fight against wildlife trafficking. Whereas the managing of the database, the Serra do Mar Corridor group concluded that 'IBAMA would be the most adequate agency for the management of the data, because of its national remit".

Tawny-browed Owl *(Pulsatrix koeniswaldiana)* - Photo: **Roni Celestino**

Still within the Workshop Plenary, IBAMA environmental technicians raised the possibility of the agency assuming charge of the database, provided there was some type of regulation, for example, a Resolution coming from CONAMA. The data input for the database would - according to these technicians - be assigned to police and agencies from SISNAMA. Herein the importance of regulations to define the role of each institution for this tool, created via the Diagnosis Project.

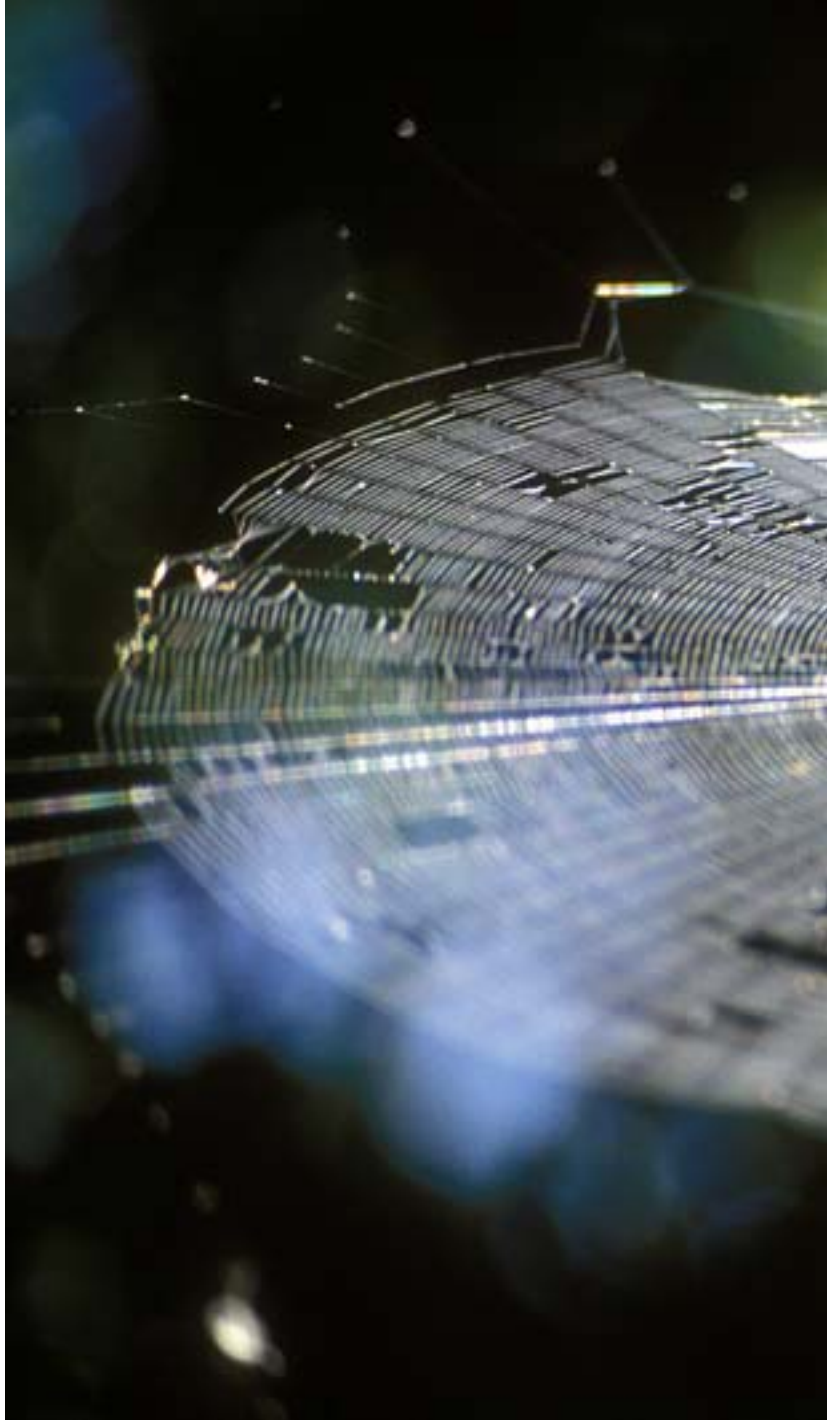
SHOULD CONFIDENTIALITY BE GUARANTEED?

One of the concerns pointed out by Federal Police agents during Workshop discussions, addressed the possible breach of confidentiality that could occur from accessing the database.

The Public Ministry recalled that "all public acts are public". On the other hand, technicians who participated in creating the database reminded that access will always be restricted to authorized agents via password. Agents from different states can consult online the names of offenders, being able to locate contumacious smugglers, which facilitates preventative actions and aids intelligence work. Yet in the case of collecting data on the most seized animals, there will be a way to obtain this information without the names of offenders appearing.

Finally, it was concluded that effective implementation of this database is essential to consolidate a pilot project which could be extended across Brazil, and truly enable accurate diagnoses of wildlife crimes, including the wildlife trade. This precision is important when dealing with a subject under so fragile a balance as wildlife, because in most cases, speed in action is the only way to contain further damage.

Diving into the tangle of legal norms.



Besides being the executing agency for the National Policy on Environment (Federal Law 6938/81), IBAMA has in its current structure, a Coordination for Protection of Species of Fauna, that has within its list of duties, to promote the elaboration, implementation, and maintenance of information systems for the protection of wildlife resources. Until such structures are in place, successive legal norms will define the creation, the duties and formal ties of this Institute. In examining this pathway, as well as their current internal charter, evidence points to IBAMA as being the legitimate administrator of the Database.

Spider's web - Photo: **André Camilli Dias**

Puma cub *(Puma concolor)* - Photo: **Fumpeb**

Wildlife is an environmental resource. It should be protected.

The 1988 constitution shed a prominent spotlight on the environment and rather innovatively on its fauna as well. Prior to this, the 1981 National Policy of Environment, despite being considered a milestone in Brazil for the protection of environmental resources, it did not address wildlife in any specific form. The right of everyone to an ecologically balanced natural environment became secured by Brazil's Constitution, imposing upon Government and collective society the duty to defend and preserve it for present and future generations. Policymakers also directly linked environmental balance with the welfare of the human species. Among the many tasks imposed upon Government to guarantee this right, is specifically, the protection of fauna. At most, previous Brazilian constitutions worried about regulating "hunting", never the protection of animals per se. Consider:

TITLE III

On State Organization

CHAPTER I

ON POLITICAL-ADMINISTRATIVE ORGANIZATION

Art. 23. It is common responsibility of the Union, States, Federal District and of Municipalities:

(...) VII - preserve the forests, fauna and flora;

Art. 24. It is left up to the Union, States and Federal District to legislate concurrently on:

VI - forests, hunting, fishing, fauna, conservation of nature, protection of soil and natural resources, environmental protection and pollution control;

TITLE VIII

On Social Order

CHAPTER VI

ON ENVIRONMENT

Art. 225. Everyone has a right to an ecologically balance environment, of common use and essential to a healthy quality of life, imposing upon Government and collective society the duty to defend and preserve it for current and future generations.

§ 1º - To ensure the effectiveness of this right, it befalls Government to: VII - protect the fauna and flora, forbidden, under law, practices that endanger their ecological function, cause the extinction of species or submit animals to cruelty.

ENVIRONMENT HAS ITS OWN POLICY

The National Policy on Environment was created by Federal Law 6.938, on August 31st, 1981, having as its central objective the preservation, improvement, and restoration of environmental quality conducive to life, aimed at ensuring, in Brazil, conditions for socio-economic development, in the interests of national security and the protection of the dignity of human life (Art. 2). This policy, according to the legal text, must address various principles, among them the "*government action in maintaining the ecological balance, considering the environment as a public heritage to be necessarily assured and protected, with the view of the collective use* " and the "*planning and enforcment of the use of environmental resources*". A key breakthrough, but still a sub-constitutional instrument.

The same law defined the environment as "*the set of conditions, laws, influences and interactions of the physical, chemical and biological, which permits, shelters and governs life in all of its forms*". And listed in the roll of environmental resources: the atmosphere, the freshwaters, surface and subterranean, the estuaries, the territorial sea, the soil, the subsoil and the elements of the biosphere. Later with the advent of a new Constitution, the Federal Law 7.804/89 made an addition to this list of environmental resources, including explicitly the fauna and flora.

The National Policy on Environment formed the SISNAMA (National Environment System), formed by the "*bodies and entities of the Union, States, Federal District, of the Territories and of Municipalities, as well as foundations instituted by Government, responsible for the protection and improvement of environmental quality*". The structure of SISNAMA suffered various changes over the years, with successive laws addressing this subject. Up until Federal Law 8.028/90 established as executing agency (within SISNAMA) the Brazilian Institute of Environment and Renewable Natural Resources - IBAMA - (founded in 1989), with the purpose of implementing and executing, as a federal agency, the government policy and directives set for the environment.

According to the Federal Law 6.938/81, with the modifications issued by Law 8.028/90, besides having an executing agency like IBAMA, SISNAMA is formed by a superior body (Government Council, which advises the President of Brazil directly), an advisory and deliberative body (CONAMA – National Council on Environment, created under Law 6938/81), a central agency (formerly, the Environment Secretariat of the Presidency; afterwards the Ministry of Environment) and also by "*sectorial bodies (state entities responsible for implementing programs, projects, and for the control and enforcement of activities capable of causing environmental degradation); and local bodies (municipal entities, responsible for the control and enforcement of these activites in their respective jurisdictions)*". Thus, the environmental police, and state and municipal secretaries of environment, comprise the SISNAMA.

DECENTRALIZATION WITH TRANSPARENCY, AN ORDER

The SISNAMA acquired further importance and transparency, with the enactment of Federal Law 10.650/03, which determines, in Article 2: that the Public Administration bodies and entities, direct, indirect, and foundational members of SISNAMA, are obliged to permit public access to documents, dispatches, and administrative processes dealing with environmental matters and to provide all environmental information that lies under their custody, via written, visual, audio, or electronic means, especially those relating to:

(...)

VII - biological diversity; (...)

Yet Article 4 states: are to be published in the Official Diary and remain available, in the respective body, within easy access of the public, lists and reports containing the data referring to following:

(...)

III - infractions and penalties imposed by respective environmental agencies; (...)

V - recurrence of environmental violations;

(...)

Single Paragraph - The relations containing the data referred to in this Article shall be made available to the public thirty days after the publication of the acts to which they relate.

Red-and-green Macaw *(Ara chloropterus)* - Photo: **André Camilli Dias**

A Brief history of IBAMA

IBAMA (Brazilian Institute of Environment and Renewable Natural Resources) was created under Federal Law 7.735/89, then linked to the Ministry of Interior, since there did not exist the Ministry of Environment. The Institute was created from the amalgamation of several bodies: SEMA (Special Secretariat of Environment, under the Ministry of Interior); SUDEPE (Superintendency for the Development of Fisheries, linked to the Ministry of Agriculture); SUDHEVEA (Superintendency for Rubber); and the IBDF (Brazilian Institute of Forestry Development).

Such a situation created, for a long time, much confusion, because the bodies "extinguished" under law continued their activities as members of IBAMA, until the new structure was fully adjusted.

IBAMA was detached from the Ministry of Interior with the enactment of Federal Law 8.028/90, which

Black-fronted Titi (Callicebus nigrifrons) - Photo: **André Camilli Dias**

gave new wording to Article 2 of Law 7.735/89: *Hereby creates the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), Federal Autarchy under Federal Regime, bestowed with legal character under Public Law, administrative and financial autonomy, linked to the Environment Secretariat of the Presidency - SEMAM-PR, with aim to advise it in the formation and coordination, as well as implementing and executing the national policy on environment and the preservation, conservation, and rational use, enforcement, control and development of natural resources.*

The Ministry of Environment was created by Federal Law 8.490/92, substituting the Environment Secretariat of the Presidency and giving the issues linked to the subject a new and important status within the Federal Government's structure. This Ministry was redefined under Federal Law 8.746/93, being renamed as the Ministry of Environment and the Legal Amazon.

In 1995, through the Provisional Measure 813, the Ministry gained new name and structure: Ministry of Environment, Water Resources and the Legal Amazon. Still in 1995, according to Federal Decree 1.361, IBAMA became formally linked, as an autarchy, to this Ministry.

A new name change happened in 1999, when the Provisional Measure 1.795, of January 1st, in its Article 17, section III, transformed the Ministry of Environment, Water Resources and the Legal Amazon into the Ministry of Environment, reclaiming its original name.

IBAMA appears once again formally linked to this Ministry and saw its goals reaffirmed with the enactment of Provisional Measure 2.216-37/01, which in its Article 2 stipulates:

Art. 2 of Law no. 7.735, of February 22nd, 1989, with text drafted by Law no. 7.804, of July 18th, 1989, becomes effective with the following text:

> *Art. 2 Hereby creates the Brazilian Institute of Environment and Renewable Natural Resources - IBAMA, autarchial entity of special regime, bestowed with legal character under public law, linked to the Ministery of Environment, with aim to* ***execute national policies on environment relating to permanent federal duties concerning the preservation, conservation and the sustainable use of environmental resources and their enforcement and control*** *(our emphasis), as well as supporting the Ministry of Environment in the execution of actions complementary to the Union, in conformity with the current legislation and directives of said Ministry.*

Therefore, IBAMA is formally the executing body of the national policies on environment, with regards to preservation, conservation, and sustainable use of environmental resources and their enforcement and governance; and is directly tied to the Ministry of Environment.

What determines the Internal Regiment

The Internal Regiment of IBAMA, approved by Ordinance 230, of May 14th, 2002, from the State Minister of Environment, determines:

Art. 1: Brazilian Institute of Environment and Renewable Natural Resources - IBAMA, autarchical entity with special regime, with administrative and financial autonomy, bestowed with legal character under public law, with headquarters in Brasília, created by Law n. 7.735, of February 22nd 1989, tied to the Ministry of Environment, has the following objectives:

I - execute national policies on environment related to the permanent federal duties, relative to the preservation, conservation, and the sustainable use of environmental resources and its enforcemente and control;

II - execute supplementary actions for the Union, in conformity with the current legislation and directive of that Ministry.

Art. 2 In fulfilling its objectives and freed from the duties of the entities that make up the National Environment System- SISNAMA

Emerald tree boa (*Corallus caninus*) - Photo: **Ivan Sazima**

it befalls IBAMA, according to the directives set by the Ministry of Environment, to develop the following federal actions:

(...)

VIII - geration, integration and systematic dissemination of information and knowledge concerning the environment;

IX - protection and integrated management of ecosystems, species, natural and genetic heritage and ecological representativeness at regional and national scale;

(...)

XVII - implementation of the National Information System on Environment -SISNIMA;

(...)

XXII - elaboration of the information system for the management of wildlife, fisheries and forestry resource use; (our emphasis)

(...)

The same regiment, in Art. 3, in establishing the organizational structure, lists, in Item IV, especific bodies, detailing five boards:

1. - Board of Forests - DIREF;
2. - Board of Wildlife and Fisheries - DIFAP;
3. - Board of Ecosystems - DIREC;
4. - Board of Environmental Licensing and Quality - DILIQ;
5. - Board of Environmental Protection - DIPRO;

It should be noted that, in the original structure of IBAMA (Federal Law 7.735/89), the boards were different and the Board of Wildlife and Fisheries did not exist.

The structure of the Board of Wildlife and Fisheries - DIFAP is thus established by the Internal Regiment:

2.1 - General Coordination Office of Fauna - CGFAU;

2.1.1 - Coordination Office for the Protection of Wildlife Species - COFAU;

2.1.2 - Coordination Office for Use Management of Wildlife Species - COEFA;

2.2 - General Coordination Office of Fisheries Resource Management - CGREP;

2.2.1 - Coordination Office for Fisheries Studies and Research - COPES;

2.2.2 - Coordination Office for Fisheries Ordering - COOPE;

In determing the competencies of the various structures, IBAMA's Internal Regime provides in its Art. 52:

To the Board of Wildlife and Fisheries befalls, in accordance with the directives of the Ministry of Environment, coordinating, supervising, regulating and guiding the execution of federal actions referring to the management and handling of wild fauna and exotics, of the fisheries resources.

To the General Coordination Office of Fauna befalls, as provided by Art. 53, supervising, regulating and guiding the

Green-barred Woodpecker *(Colaptes melanochlorus)* - Photo: **Vincent Kurt Lo**

execution and implementation of actions concerning wildlife policy and of exotic fauna in the wild and in captivity, besides managing the inherent demands of the provisions of national and international agreements, relating to the policies for which the Country is signatory.

Article 54 determines that it befalls the Coordination Office for the Protection of Wildlife Species to implement the necessary measures to protect wildlife species, especially, for species threatened with extinction, species with restricted access and emerging situations, and in particular:

(...)

IV - promote the elaboration and periodic revision of norms and strategies for species protection;

V - guide the elaboration and execution of security plans and species management;

VI - monitor, supervise and assess protection measures and species management;

VII - promote the control and implementation of continuous improvement measures in the execution of action plans for the protection and management of species;

(...)

X - coordinate the implementation of wildlife protection projects, through guidance, supervision, evaluation and control of these activities within the decentralized units;

XI - incentivise and support the institutional involvement in collegiate bodies, technical and scientific, also aimed that elaborating strategies for the conservation and management of fauna, in the wild or in captivity, implementing the relevant actions;

Crab-eatting Racoon *(Procyon cancrivorus)* - Photo: **André Camilli Dias**

XII - promote the elaboration and updating of the official list of species threatened with extinction;

XIII - promote the elaboration, insertion, implementation and maintenance of information systems for the protection of wildlife resources; (our emphasis)

XIV - support the development of actions aimed at bringing to society the knowledge of Brazilian fauna, seeking their awareness in the conservation of wildlife, especially those endangered.

The Coordination Office for Use Management of Wildlife Species concentrates its duties to the access and management of using any wildlife species, native or exotic - issues not addressed herein.

Without a doubt, IBAMA holds an essential role in the protection, conservation, and preservation of Brazilian fauna. Aside from the numerous responsibilities of the agency regarding wildlife and of its direct reporting to the Ministry of Environment, the institutional weight of IBAMA is undeniable. Across Brazil, the very word IBAMA raises fear in potential environmental law offenders. Inexplicably, according to the questionnaire results and evidence collected during the Workshop, the Institute finds itself without structure and resources. This situation demands a more attentive look by Brazilian society and established authorities. After all, IBAMA is one of the main official instruments in the defense and preservation of the environment - duties imposed constitutionally, on Government and collective society.

The resources of the Database

Figure 1: Website www.diagnostico.org.br

The database was built during the development of the Diagnosis project, with the participation of representatives from all the official institutions that work with wildlife, in the areas of licensing, governance, management and enforcement, at municipal and state levels, for the five states, aside from the federal level (check Participants and Events, under the main menu of the website *www.diagnostico.org.br*).

Figure 2: Webpage from www.diagnostico.org.br

Access is via the System tab, available under the Main menu, but only possible through password.

The Resources of the Database

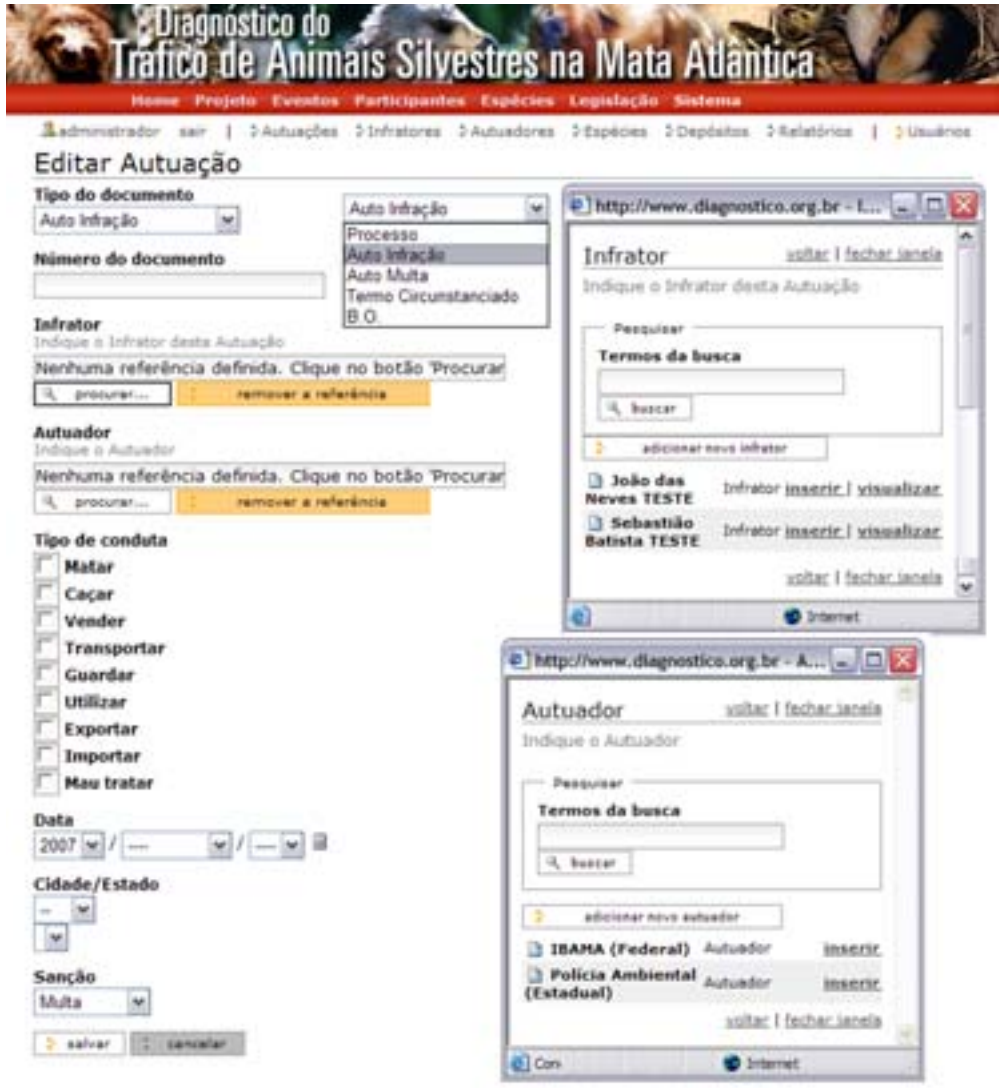


Figure 3: Test page of the database. www.diagnostico.org.br

The Database enables the launch, by authorized institutions, of all contained information on wildlife violations, issued by IBAMA, Police, and Secretaries of Environment. It is possible to identify the offender, the type of offense, the location this took place, the sanction, who was the acting body etc.

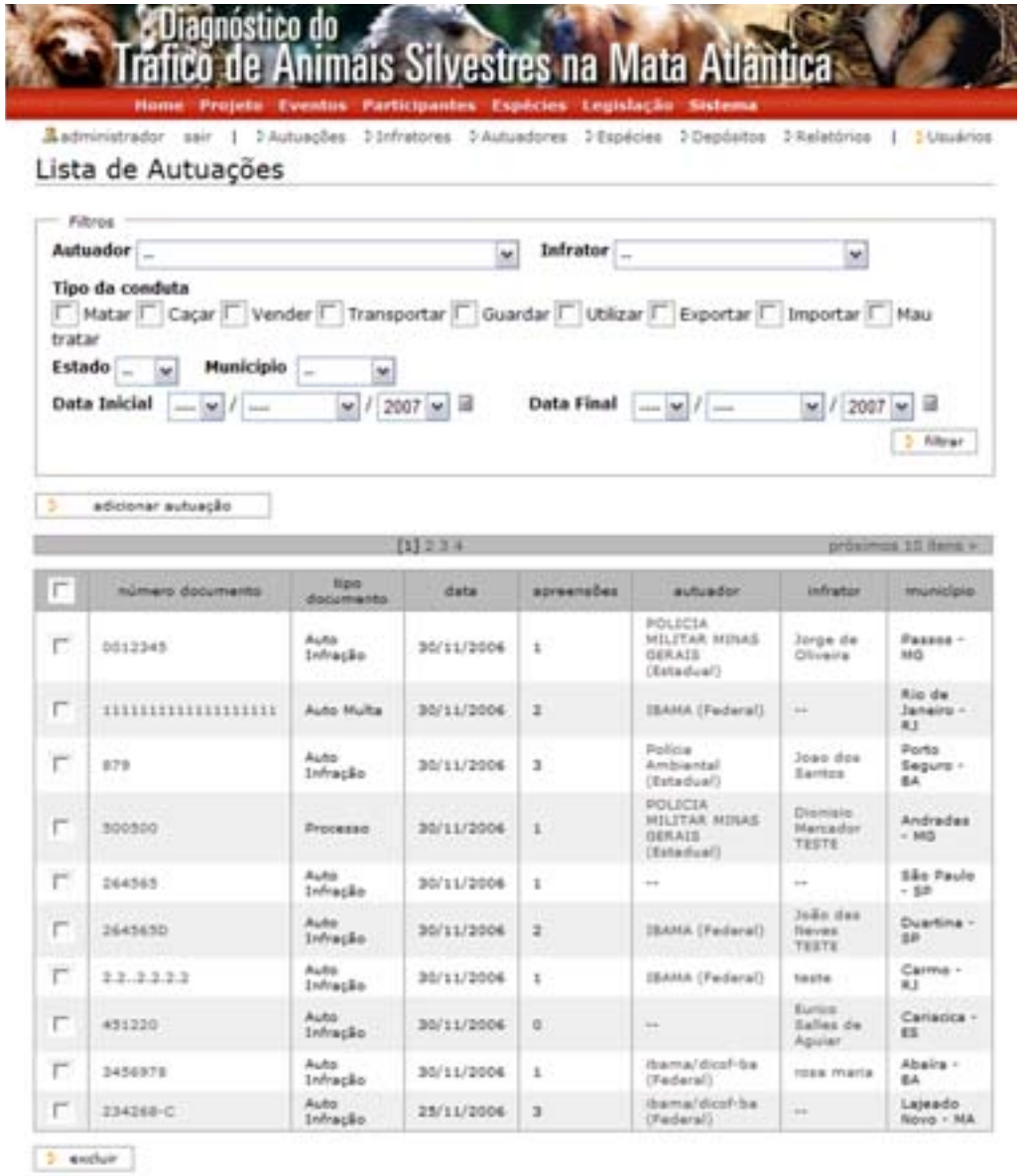


Figure 4: Test page for the database. www.diagnostico.org.br

The system allows you to list previous violations, allowing the user to learn of others involved in the offense who committed infractions against wildlife.

Figure 5: Test page for the database. www.diagnostico.org.br

The information on animals seized covers: classification, scientific name, number of specimens involved in the apprehension, and their destiny.

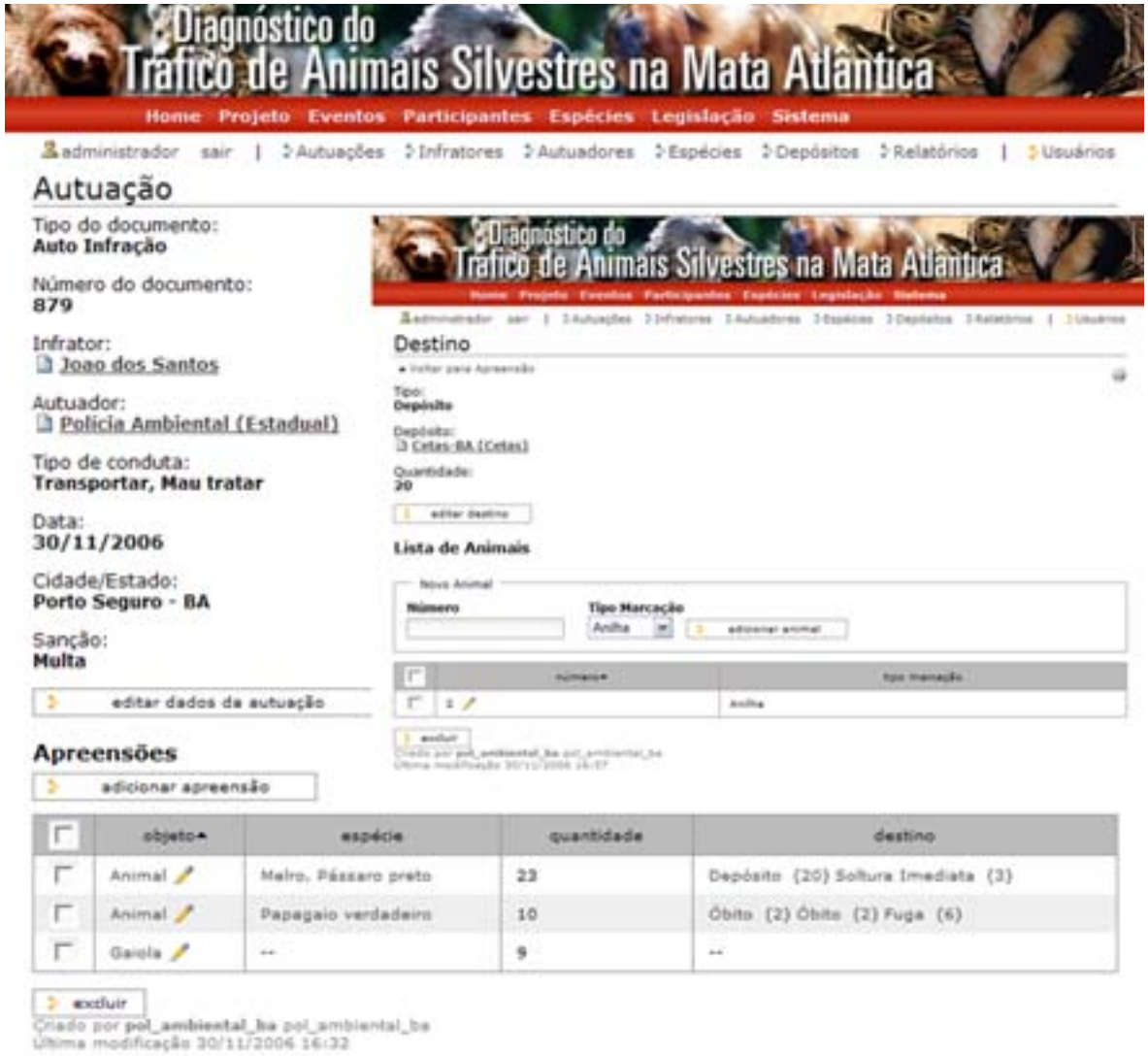


Figure 6: Test page for the database. www.diagnostico.org.br

Under the Destiny tab, it is possible to check information concerning specimens, including the type and identification number received at the inbound center, like, for example, the registration number and tag type received (ring, microchip, tattoo etc). The place where the animal was deposited can also be identified: CETAS, zoo, breeder - with specifications on social security numbers (CNPJ or CPF, in the case of trustee custodians).

Besides the specifics on the animals, the system permits the disclosure of other items seized, such as weapons and equipment (cages, traps, nets etc).

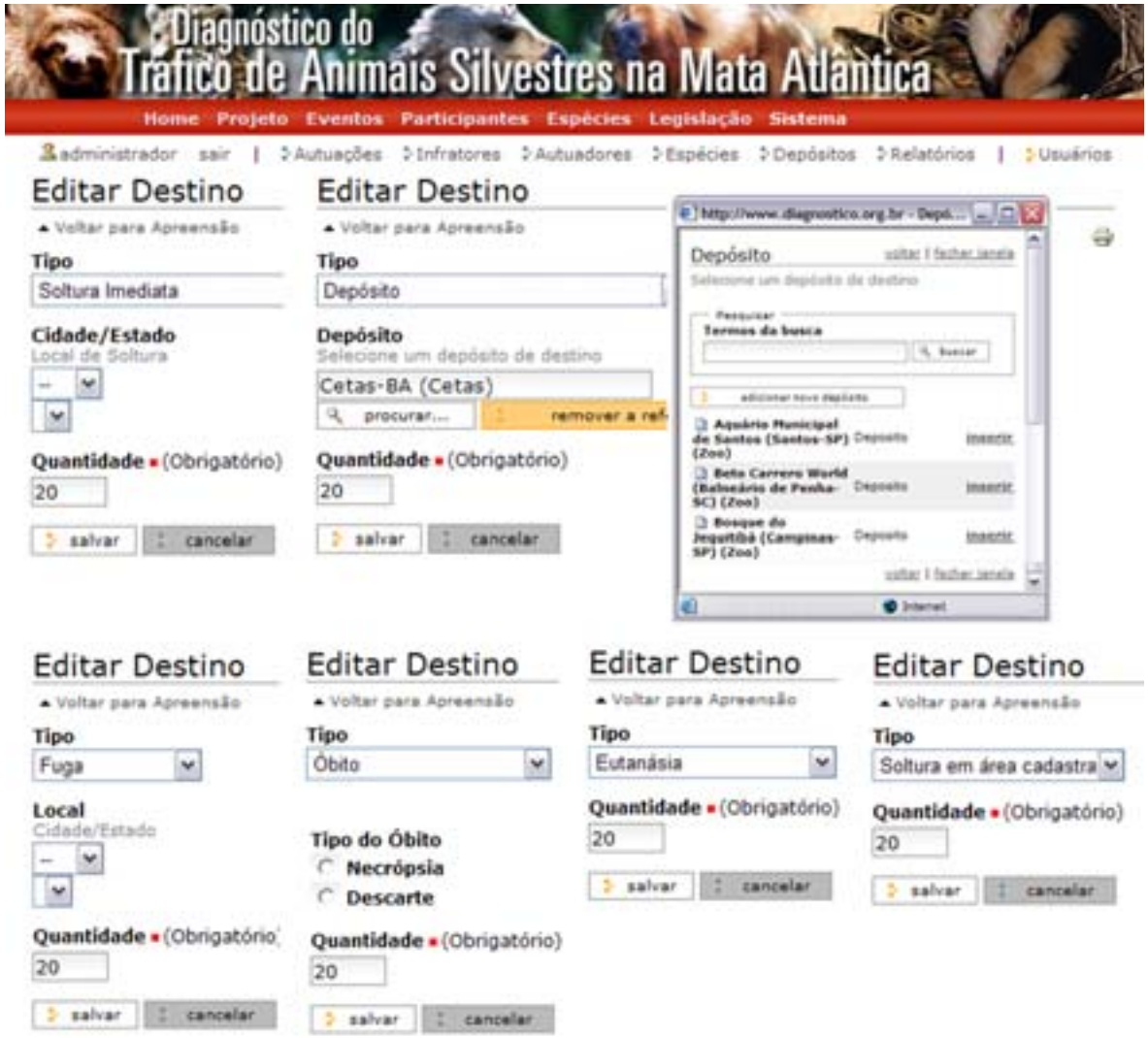


Figure 7: Test page for the database. www.diagnostico.org.br

Additionally, other allocations given to the seized animals can be viewed on the system, such as releases, escapes, and deaths.

Species online, support enforcement.

Another extremely useful resource for enforcement agents is the *Species Bank - Species Registered and Endangered Species*. On the site link *Species Registered*, it is possible to search by common or scientific name each species. If the species is registered, a window appears with its biological information and photo. It is further shown whether the species belongs to an endangered list, and its threat level.

This archive is an important instrument, especially for enforcement agents who often have difficulty in identifying seized animals. An example are parrots, as there are now information available on 10 endemic species.

Figure 8: Webpage of www.diagnostico.org.br

Apart from the proper identification, it is essential that the agent has knowledge on whether the animal belongs to any endangered list, since the Decree 3.179/99, which regulates over Federal Law 9.605/98 (Law on Environment Crimes), determines, in various articles, significant increases to the original fine, should this species belong to the official list of endangered Brazilian species or to CITES Annex I list - (Convention on International Trade in Endangered Species of Wild Fauna and Flora). Additionally, extra penalty increments in the case the species belongs to both listings (Articles 11 to 15 and 17). The Federal Law 9.605/98 itself stipulates increases to the sentence if the crime is committed "*against rare species or considered threatened with extinction, even if only at the place of the infringement*".

The other site link of the Species Bank, called *Endangered Species*, makes available the National List of Brazilian Wildlife Species Threatened with Extinction, from IBAMA; the list from the International Union for Conservation of Nature (IUCN); and the lists for the five states involved in the Project (Bahia, Espírito Santo, Rio de Janeiro, Minas Gerais and São Paulo). Interestingly, for each state, one can also access the list of species for that locality, included in the national list.

Figure 9: Webpage from www.diagnostico.org.br

7

STRATEGIC PLAN

All the actions geared towards the defence and preservation of wildlife are not up to the differentiated status this environmental resource received from the Constitution in 1988. Wildlife has systematically been compromised by deforestation, fires, hunting, fishing, harvesting, the expansion of unplanned urbanization and agriculture, among other anthropogenic actions compromising the environment. Hence, the damages caused by the illegal trade, despite very serious, constitute only one of the aggressions against wild animals. The Brazilian fauna deserves a consistent and broad defence and preservation program, in every sense. However, as the *Diagnosis of Wildlife Trafficking in the Central and Serra do Mar Corridors of the Atlantic Forest and the Implications of this Activity on the Conservation of the Biome* focused on diagnosing the wildlife trade, the guidelines for elaborating a strategic plan concentrate on this theme. It is noteworthy recalling that the consolidation of these guidelines was based, fundamentally, on the results of the Workshop, detailed in Chapter 5.

Rufescent Tiger Heron fledgling *(Tigrisoma lineatum)* - Photo: **André Camilli Dias**

1 - TYPIFICATION OF TRAFFICKING

Considering that there does not exist within Brazilian legislation, a specific penal type that defines as a crime the act of trafficking wildlife, it is essential the introduction of a new article in Law n. 9.605/98, describing this.

Given that the 1st National Report on Wildlife Trade (RENCTAS, 2001) pointed to the fact that the illegal commerce of wildlife is "*the third illicit activity of the world, after weapons and drugs*", it is clear that the penalties provided for in Art. 29 of the abovementioned law are insufficient at combating such a lucrative illicit activity. Especially since the conduct therein described are much too generic to allow for only the intension of increasing the comminated penalties. It is necessary the creation of a new specific penal type, with sentences commensurate to the severity and extent of the damage caused to the protected legal good.

It is stressed that the typification has to contemplate the peculiarities of the wildlife trade, targeting especially those directly responsible for the functioning of this activity, that is, namely the smugglers. The penalties should be sufficiently high to not permit the penal transferral (Art. 76, Law n. 9.099/95) or the suspension of proceedings (Art. 89, Law n. 9.099/95).

2 - FEDERAL LAW ON WILDLIFE PROTECTION

Approve and adopt a law specific to wildlife. The Federal Law 5.197/67, which deals with the theme, is quite permissive about the use of wildlife, which contradicts the modern directives of preservation of this environmental resource imposed by the Constitution of 1988. The Law on Environment Crimes (9.605/98) similarly does not detail all matters relating to fauna.

As was reminded during the Workshop, years before, a Bill on Wildlife Protection was consolidated with the participation of subsections of the Order of Lawyers of Brazil, non-governmental entities, technicians, representatives of municipal and state legislatures. The final text was worked on by a Temporary Technical Body on Wildlife, created by the National Council for the Environment (CONAMA), generating the Draft Bill on Wildlife Protection, approved during the 46th Regular Meeting of the council in 1997. The document was forwarded by the then president of CONAMA, the Environment Minister, Gustavo Krause Gonçalves Sobrinho, to the then Chief Minister of the Civil House of the Presidency, Clóvis de Barros Carvalho. The Bill never reached Congress, on the grounds that the future Law on Environmental Crimes would fully contemplate the protection of wildlife. However, this did not happen, and there is urgency in consolidating a federal law for wildlife, contemplating all aspects not addressed by Law 9.605/98, like the breeding of wild animals in captivity.

3 - CLARITY IN THE COMPETENCIES OF INSTITUTIONS

Detailing, clarifying and advocating about the respective roles and competencies of all the bodies of SISNAMA (National Environment System) with regards to wildlife. Based on this, and the structuring of individual bodies, an efficient joint performance can be attained, in a complementary and supportive manner, including the carrying out of intelligence operations. Yet this re-evalution of competencies and interfaces should happen seamlessly, with the agreement and participation of all those involved.

4 - EQUIPPING OF AGENCIES AND STAFF TRAINING

Suitable facilities; purchase of vehicles, equipment and material; allocation of financial resources; and training of personnel for the agencies encharged with enforcing, defending, and conserving fauna. The ideal would be the promotion of some joint training among the various institutions, to act in an integrated form, optimizing resources and equipment. One might consider the formation of a permanent strike force to combat the wildlife trade. The training should include the identification and handling of animals victimized by human action, especially from trafficking.

5 - NETWORK OF CETAS

Designing a federal network of CETAS (Wildlife Screening or Management Center) and stimulate establishing municipal and state centers, controlled by Government. Every center should have physical infrastructure and trained staff compatible with the complexity of the husbandry requirements of animals and their final destination; and prioritize the reintroduction of specimens to their areas of origin (therein, the importance of a national network of CETAS). The control over allocated and received animals needs to be completely refined, with methods for individual tagging, registration in computerized databases interconnected throughout the network, and identification via DNA tests, when applicable. The CETAS should furthermore promote environmental education and stimulate scientific knowledge geared at species conservation in the wild.

6 - CRITERIA FOR RELEASE AND ALLOCATIONS

It is necessary to establish technical criteria compatible for a national network of CETAS, respecting regional diversity and aiming primarily for wildlife releases. The future Law on Wildlife Protection should be clearer on the domestic custody of wild animals. Presently, an animal can stay with a custodian (Federal Decree 3.179/99) and this, in many cases is the offender themselves. With this verdict, the Decree opposes the law which it oversees – Federal Law 9.605/98, which prioritizes releases and does not foresee the possibility of an animal staying in the hands of an offender. Lastly, the criteria for release, followed throughout Brazil, can be defined by the environmental bodies in conjunction with conservation NGOs.

Red-tailed Amazon *(Amazona brasiliensis)* - Photo: **Zig Koch**

7 - COMMERCIAL AND AMATEUR BREEDERS

The allocation of animals to these establishments needs to be completely revised. In practice, commercial breeding should, in the old conception of law 5.197/67, contribute to the reduction of animals removed from the wild; a role it currently does not exercise. Trafficking grows year on year, and feeds even the so-called legal trade. Animals confiscated from trafficking end up going to breeding centers, since the agencies responsible for enforcement allege having no where else to forward them to. Hence an animal, product of an illegal activity (wildlife trade), will bear offspring in breeding centers which shall supply the legal commerce, fuelling a highly questionable vicious circle. Moreover, IBAMA technicians affirm that many breeding centers are places where animals and young caught in the wild are "warmed-up". Such crimes are difficult to detect and counter, by the hinderance of scientific evidence confirming the biological origin of wild animals (paternity).

As for amateur breeders, the suggestion is that the government paralyzes the concession of licenses, and reviews all rules. Currently, many amateurs trade animals and maintain collections with hundreds of specimens, which entirely mischaracterizes 'an amateur activity'. Furthermore, the major focus of wildlife trafficking are the passerines - and precisely those species most retrieved from the illegal trade by enforcement agencies, are those favored by so-called amateur breeders. These findings dispel the belief that regulating the amateur breeders will reduce the removal of animals from the wild.

8 - DOMESTIC CUSTODY

The domestic custody of wildlife needs to be reviewed. The CONAMA Resolution 384/06, which presides over the concession of provisional domestic custody of seized wildlife, was fiercely fought still in its proceeding period, by non-governmental organizations and even by the IBAMA superintendencies across Brazil. As it is yet not regulated, it may stimulate trafficking and the illegal possession of wild animals. The measure may also intensify the occurrence of animal abuse, due to the lack of knowledge of their physical and biological needs, as well as increasing the risk of spreading infectious diseases between wild animals and humans or vice-versa (zoonoses, many difficult to diagnose).

These considerations were detailed by researchers, technicians, police and environmental agents, state defenders, NGO representatives and universities present at the Workshop. One of the issued raised was that IBAMA is not prepared to enforce these "custodians", which would total millions of individuals. Currently, the rising number of commercial and amateur breeders already surpasses the enforcement capacity of the agency; and, in practice, irregularities are only detected through tip-offs.

Another issue to be reviewed concerns the spontaneous donation of wildlife to enforcement agencies and to CETAS by the population. Most often, these specimens do not bear proof of legal origin, but the offender does not suffer any form of punishment; a practice which might encourage the illegal trade.

9 - COMBAT TRAFFICKING AT ITS ORIGIN

The consolidation of a network of CETAS, forming a solid structure to recieve and allocate wild animals seized from the illegal trade, is essential, but it is not a solution to fighting trafficking. The prime action, but rarely developed with efficiency, is to not to remove any wildlife from their *habitat*. Blaming the socio-economic situation for the harvesting and vending of animals can no longer be an acceptible justification, in the same fashion that drug trafficking are not tolerated in poor areas. Education and repression need to go together, as well as the insertion of projects that encourage income-generating activities for those communities that are not involved in the misuse of natural resources.

10 - PUBLIC POLICIES

Public policies geared towards the protection of fauna, in the municipal, state, and federal levels, should be instated with the respective legal instruments and the participation of civil society. The main focus should be: continuous education; and massive public campaigns that stimulate the preservation of wildlife and not their upkeep in captivity. Undue exploitation of wildlife can not become fashion, should not be confused as a stimulus for tourism, and should not generate dividends for a community. Income can be generated in a region via, for example, eco-tourism, bird watching, photographic safaris, but, never, through the illegal harvesting and selling of animals. Wildlife should be treated as a priority by legislators and governors, as much as the other natural resources.

11 - ACTIVATION OF THE DATABASE AND CONTINUING THE PROCESS

The institutions involved in the Diagnosis project show no doubts about the need for a database that collects and consolidates information on crimes committed against wildlife. As for the database created during the development of this work, doubts remained over the its operating procedures. As for the probable administrator, most of those involved appointed IBAMA as the most suitable institution precisely for being the executor of the national policy on environment. The practical and legal details call for norms which should be prioritized throughout the process. It is certain that this tool should not be left unused, since one of the major findings of this work is how much the lack of information hinders the repression of trafficking and compromises potential preservation projects. The database may also contribute to the Ecological Corridors Project by the Ministry of Environment, where the issue of wildlife was not awarded due importance. Another key aspect is the continuity of the process, which necessarily begins with the disclosure of documents herein generated to the most diverse ranks of the institutions involved, causing proactive attitudes in defense of wildlife.

Loggerhead sea turtle hatchling *(Caretta caretta)* - Photo: **André Camilli Dias**

ACKNOWLEDGMENTS

The results of the Diagnosis project, presented in this publication, were only possible thanks to the efforts, commitment, and courage of hundreds of individuals involved in this work, throughout the various stages of its development. This collaboration was essential for the consolidation of the the products generated and, regardless of the degree of involvement, or the extent of participation of each one, listed here are the potential mobilizing agents for the continuity of this process within their institutions or communities in the states of Bahia, Espírito Santo, Minas Gerais, Rio de Janeiro and São Paulo, and the Federal District.

Achiles Lima Macêdo - Federal Police-BA

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Adilson Paulo Prudente do Amaral Filho – state prosecutor for the Public Ministry-SP

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Adriano Pereira Paglia – biodiversity analyst of the Atlantic Forest Program -Conservation International Brasil-MG

Airton de Grande – communications adviser IBAMA-SP

Alberto Felipe Klotz – IBAMA-ES

Alberto Gonçalves da Silva – IBAMA-BA

Alcides Pissinatti – director of the Center for Primatology of Rio de Janeiro

Aléssio Venturelli Gonçalves - inspector

Alessandra Aparecida Silva - Federation of Private Ecological Reserves for the State of São Paulo

Alexandre Rigotti – 2nd lieutenant Military Police / Directory of Environment and Traffic-MG (*)

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Ana Lúcia de Oliveira Leão – lieutenant Company of Environmental Protection of the Military Police-BA (**)

Ana Lúcia Fiúza – Superintendency IBAMA-BA (*)

Ana Raquel Gomes Faria – IBAMA-Brasília

Analice de Novais Pereira – IBAMA superintendent for the State of São Paulo

Anderson Mendes Augusto - Foundation RioZoo

André Camilli Dias – photographer-SP

André Hirsch – Coordination Office of Endangered Species - Fundação Biodiversitas-MG

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Antonietta Ficucella - biologist-SP

Antonio Carlos de Carvalho Filho – managing director of Fundação Parque Zoológico of São Paulo

Antonio Carlos Orlando Ribeiro da Costa - Instituto Butantan-SP

Arley Gomes de Lagos Ferreira – captain Military Police/Directory of Environment and Traffic-MG (*)

Bartira Goes – state defender for the Public Ministry-BA

Carlo Marx Siqueira Rocha – major Environmental Military Police -ES (*)

Carlos Alexandre Rey Matias -1st lieutenant-vet of Forest and Environmental Police-RJ (*) (**)

Carlos Gonzaga Corrêa – 1st sergeant Military Police/Deparment of Environment and Traffic-MG (*)

Carlos Henrique Prestes Camargo – state defender for the Public Ministry of the State of São Paulo

Carlos Roberto Barretto – vice-president of Pró-Animal

Carlos Roberto Leandro - Federal Police-SP

Cecília Fernandes – events coordinator at Renctas

Célio Costa Pinto – IBAMA superintendent for the State of Bahia (*)

Cesar Yukio Takara - Methodist University of São Paulo

Cícero Leonardo da Cunha – major Military Police/Directory of Environment and Traffic-MG

Claudecy Vieira dos Santos – major Environmental Protection Police-BA (*)

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Cláudia Gibeli Gomes – Municipal Secretary of Green and Environment-SP

Cláudia Repina S. de Oliveira – Secretary of Environment-BA

Cosette Barrabás Xavier da Silva - IBAMA-PR

Cristiano Araújo – administrative/operational coordinator at Renctas

Cristina Amaral Passos Figueiredo - General Superintendency of the Federal Police-MG

Cristina Harumi Adania – wildlife coordinator at Associação Mata Ciliar-SP

Daniel Ambrósio da Rocha Vilela - IBAMA-MG

Dener Giovanini – chief coordinator at Renctas

Denise Marçal Rambaldi – secretary general at Associação Mico-Leão-Dourado-RJ

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Eduardo Frederico Cabral de Oliveira – lieutenant-colonel of Forest and Environmental Police-RJ (*)

Erika Guimarães – coordinator at Alliance for the Atlantic Forest/Fundação SOS Mata Atlântica-SP

Evandro Teófilo – commander major at 2nd Company of the Forest Police-MG

Fábio Murilo Wagnitz – IBAMA-ES

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Francisco Luís Franco – scientific researcher at Instituto Butantan-SP

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Geraldo da Silva Lopes - Federal Highway Police-BA

Gilson de Oliveira Wenceslau – captain Military Police/Directory of Environment and Traffic-MG (**)

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Giuseppe Puorto - director of the Biology Museum - Instituto Butantan-SP

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Jacques Augusto Passamani – chief of Division of Control and Enforcement/IBAMA-ES

João Batista da Cruz – director-president of Fundação Parque Zoológico at São Paulo

João Batista Rizzieri – president Federation of Private Ecological Reserves for the State of São Paulo

João Carlos Batista – colonel Environmental Military Police-ES (*)

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Luís Fábio Silveira – curator of Museum of Zoology of the University of São Paulo

Luiz Eduardo Ferreira Fontes – professor at Federal University of Viçosa-MG

Luiz Fernando Duarte de Moraes - IBAMA-RJ (**)

Luiz Paulo Pinto – director of Atlantic Forest Program at Conservation International Brasil-MG

Luiz Soares Nascimento – president of Instituto Ambiental Cafundó-ES

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Maria Isabel Martins Nascimento - Instituto de Defesa Agropecuária Florestal-ES

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