

Enforcement techniques of wild animal trafficking in Mato Grosso do Sul¹

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SUMMARY

The trafficking of wild animals is a reality in Mato Grosso do Sul and in various other Brazilian states as well, and is of concern to governmental authorities. With a background of experience accumulated over the 15 years of its existence, the 15th Battalion of Environmental Military Police (*15^o Batalhão da Polícia Militar Ambiental-BPMA*), analyzed the results of enforcement and evaluated its efficiency over time. It also sought to understand the characteristics of wild animal trafficking in Mato Grosso do Sul, based on an accounting of the number of animals and species preferred for this commerce. In order to accomplish this, they analyzed the institution's documented entries, pertaining to the years 1999 to 2002. The most common species were the red-footed tortoise (*Geochelone* sp) and the parrots (*Amazona* sp). The turquoise-fronted parrot (*Amazona aestiva*) was the most common in the voluntary registry of animals in captivity, carried out in the municipalities of Três Lagoas (1997) and Dourados (1999 and 2000). Among the proposed recommendations, a number distinguished themselves: the necessity to qualify policemen to identify the species, the creation of a single, integrated system to record data for the institutions involved in combating trafficking, the creation of an enforcement strategy in the municipalities involved, and a specific plan of action for enforcement during the months with the highest incidence rates.

Keywords: Wild animal trafficking, enforcement, Environmental Military Police, Mato Grosso do Sul.

INTRODUCTION

The trafficking of wild animals is spreading throughout the country; however, there are few statistics available on the subject. The simple desire to keep a wild animal in captivity is one of the factors which contributes to the inclusion of 395 species of fauna on the Brazilian list of animals threatened with extinction (IBAMA, 2003). Another troubling factor is the indiscriminate release of animals held in captivity. Acts such as these can cause numerous damages to the local fauna, for example, the introduction of pathogenic agents. The

voluntary handing over of these animals to the enforcement authorities could overload zoos and triage centers with animals. In general, these voluntary turns are motivated by the costs of maintaining these animals or by the discovery of tough Brazilian legislation. We cannot forget that the interaction of men with animals via the practice of hunting, capture for domestication and profit, among others, is something intrinsic to mankind and has its origins in prehistory (Teich, 2003).

The abundance of wildlife in Mato Grosso do Sul is very attractive to both national and international traffickers and happens as the result of diverse objectives, such as satisfying the market for collectors and pet stores, unauthorized scientific ends and also the breeding as mascots (RENCTAS, 2002a). Environmental enforcement, conducted since 1987 by the 15th Battalion of Environmental Military Police (BPMA), acted initially to combat the clandestine hunting of the pantanal caiman (*Caiman crocodilus yacare*) but, over the years, expanded its role to include the combating of wild animal trafficking as its primary responsibility.

Using the information available in the documents of the Environmental Police for the period between 1999 and 2002, the results of this enforcement were analyzed and its efficacy over time evaluated. It also sought to understand the characteristics of wildlife trafficking in Mato Grosso do Sul, based on the numbers and species of animals preferred for this kind of commerce.

Environmental enforcement in Mato Grosso do Sul

The first environmental enforcement statistics in the state were carried out in 1979 by the Mato Grosso do Sul Institute of Environmental Preservation and Control (*Instituto de Preservação e Controle Ambiental do Mato Grosso do Sul - INAMB*). At that time, the State Military Police (*Polícia Militar do Mato Grosso do Sul - PMMS*) limited themselves to supporting the actions of INAMB, contributing personnel, arms and equipment to enforcement operations that concentrated, in general, on curtailing the actions of pantanal caiman hunters (known as "leathermen"). This support was carried out by "Companies and Detachments of the Interior," located in the municipalities of Corumbá, Coxim and Aquidauana. The enforcement operations were generally executed by forming two checkpoints along highway BR-262: at the bridge over the river Miranda, and another 12 km. (7 mi.) from Corumbá. These operations made the transit of live animals and pelts more difficult for poachers.

With an aim at organizing enforcement operations and contributing to the conservation of the Pantanal, the Police Forest Unit was created in 1981, subordinate to the MS Military Police Command (PMMS) (State

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Decree no. 1,091/81 and State Law no. 254/81), which performed, in a preventive restraining way, the ostensible burden of policing. Moving in accordance with the availability of material resources and within the limits of area, the INAMB was able to restrain predatory activities against the flora and fauna, by the arrest of flagrant violators.

In 1987, seeking to expand enforcement operations and begin the process of establishing norms for environmental questions in the state, the INAMB was dissolved, handing over to PMMS, through the Independent Company of Forest Military Police (*Companhia Independente de Polícia Militar Florestal - CIPMFlo*), the authority to carry out enforcement of rivers and springs (State Law no. 702/87). The same law also created the State Secretariat of the Environment (*Secretaria Estadual de Meio Ambiente - SEMA*), with the task of codifying and controlling the use of natural resources, which began to rely upon the support of the CIPMFlo.

On March 19, 1987, the Commandant General of PMMS effectively activated the CIPMFlo, numbering just 80 military police, which were distributed among the municipalities considered to be strategic for the conservation of the Pantanal: Corumbá (provisionary headquarters), Aquidauana and Coxim. Only later were the Porto Murtinho, Miranda, Rio Negro and Bonito platoons activated.

During the period between 1987 and 1990, environmental enforcement concentrated its efforts on suppressing the hunting of the pantanal caiman. However, with the abatement of these clandestine activities beginning in the 1990's (Mourão, 2000), the policing began to focus upon other statewide activities under its purview, of note: predatory fishing, illegal deforestation, wood removal, the burning of forest lands, the clandestine transportation of wood and peat, and the fight against the trafficking of wild animals.

The animals originating from trafficking are sent to the Wild Animal Rehabilitation Center (*Centro de Reabilitação de Animais Silvestres - CRAS*), department of the MS State Secretary of the Environment (*Secretaria de Estado de Meio Ambiente de MS - SEMA-MS*), responsible for the reception, rehabilitation and placement of wild animals seized or donated by the public. During the rehabilitation period, the animals are accompanied by technicians specialized in the triage and handling of wild animals. The fate of these animals follows basic principles, which take into consideration aspects such as: specie, origin, physical condition and health, degree of domestication and requirements for its re-adaptation to its natural environment. Final placements can be divided into three categories: destined for the habitat, re-population programs in acclimatization areas; conservation projects for the species (*ex situ* or *in situ*), developed by institutions previously registered and authorized; and zoos licensed by IBAMA.

Beginning in 2000, the CIPMFlo began to call itself Environmental Military Police (*Polícia Militar Ambiental - PMA*) (State Decree no. 9,773/00) and in 2002 the PMA received the title of 15th Battalion of Environmental Military Police (15^o BPMA) (State Decree no. 10,848/02). In order to better address the specific needs and particularities of enforcement in different regions of the state, 21 sub units of the 15th Battalion (BPMA) were created between 1987 and 2003 and distributed throughout the state, with emphasis on the pivotal regions: Corumbá, Aquidauana, Miranda, Coxim, Bonito, Jardim, Porto Murtinho and Campo Grande. The force's number was expanded from 80 in 1987 to 355 in 2002.

MATERIAL AND METHODS

Area of study

With an area of 358,159 km² (128,937 sq. mi.), the State of Mato Grosso do Sul (MS) is bounded by five other Brazilian states (Mato Grosso, Goiás, Minas Gerais, São Paulo and Paraná) and two countries (Bolivia and Paraguay).

The vegetation consists of a patchwork of dense savanna, open savanna, "cerradão" (dense savanna woodland), grassy scrubland, floodplains with "spots of forest" and breeding areas. The floodplains are regions covered by grasses and herbs, located in areas of seasonal river flooding; and the "spots of forest" are small elevated (1-2 m., 3-6 ft.) geomorphological features, free of flooding, where a dense arboreal vegetation predominates, being almost free of bush and herb strata, and generally serve as a refuge for animals during the flood periods (Pott, 1997 and Silva *et al.* 1998).

The local biodiversity is comprised of, at least, 3,500 species of plants, 264 fish, 652 birds, 102 mammals, 177 reptiles and 40 of amphibians (Coutinho *et al.* 1997). This biodiversity mainly originates from the savanna, and receives a great deal of amazonian influence in its northern regions. Its principal feature is an abundance and diversity of species of large vertebrates, such as caimans (estimated at around 3.5 million individuals), in addition to hundreds of thousand of capybara (*Hydrochoerus hydrochaeris*) and tens of thousand of marsh deer (*Blastocerus dichotomus*) and pampas deer (*Ozotocerus bezoarticus*) (Mourão *et al.* 2000).

Collection of data

Data regarding the monitoring of wildlife was recorded in 37 municipalities in Mato Grosso do Sul, during the 1999-2000 period. The records before 1999 were not analyzed because the data was not standardized, making the analysis of this information difficult. For the period under study, the daily operations archives of the institution were consulted with regards to the annual tabulations of ground patrolling, water

patrolling, roadway blockades and response to denouncements. The results of these activities were recorded in terms of the number of wild animals seized, cages/traps, firearms (handguns and rifles), the quantity of animal meat and pelts, and the number of fines or warnings issued. Every control record of confiscation and collection of animals included: year, municipality, specie, number of specie, data from the Report of Violation (*Auto de Infração - AI*) and the Environmental Police Incident Report (*Ocorrência Policial Ambiental - OPA*), and the final destination of the animal. The AI is a document that generates administrative consequences and penalties for the perpetrator, and the OPA is an internal control document of BPMA that aids in the documentation of the violation and in the transition of the animals to CRAS.

Those involved in violations in which the police produced, in the process of enforcement, an AI and a Terms of Captivity and Care (*Termo de Apreensão e Depósito - TAD*) were labeled as "confiscated animals". The emission, or non-emission, of an AI follows guidelines established during the years of the institutions operation which are evaluated by the officer responding to the violation, such as: if the animal is the subject of a dispute between neighbors; quantity; handling needs and health of the animals; locale of the infraction; reason for enforcement; fate of the animals, presence, or lack, of endangered species in the batch; and socioeconomic status of the perpetrator. However, it was not possible to ascertain in the institution's archives, how many, and which, criteria were employed for each violation.

Those that arrived at the 15th BPMA as a result of the collection of wild animals in urban areas, in public establishments and/or private residences by the Military Fire Department (*Corpo de Bombeiros Militar - CBM/MS*), or when a police action was requested by the public, were labeled as "collected animals." In the last case, in general, it was not possible to identify the individual who detained the animal, the statements typically being of the type: "the animal doesn't belong to me," "it was left next to my house," and "it was fleeing from somewhere nearby." When the policing occurs as a result of a telephone solicitation by people who want to hand over an animal under their care, or in cases where an animal appears in someone's home, a fine is not levied and the animal is also classified as "collected," and an OPA is filed.

The fate of these animals was classified as "sent to CRAS" (the department of the MS State Secretary of the Environment (SEMA-MS) responsible for the reception, rehabilitation and placement of wild animals confiscated from, or donated by, the population), or as "other destinations." The case of "other destinations" occurred when the animal was released into its natural environment, whether or not process of reintroduction

was accompanied by a qualified professional, or when it was transferred to institutions which support the PMA, such as the electrical energy company of São Paulo in Três Lagoas, Bataguassu and Porto Primavera, and the Champion Paper and Cellulose (*Champion Papel e Celulose*) company in Três Lagoas.

Registration of wild animals in captivity

Data was assembled which was derived from the registration of wild animals maintained in captivity in the municipalities of Três Lagoas (1997) and Dourados (1999 and 2000). The development of registration began when those individuals keeping wild animals in captivity were invited to report to the sub units of the 15th BPMA, in order to register the animals that they had encountered on their lands. The time available for those interested in registering animals was 90 days in each municipality. The advance publicity was carried out with the support of the local press (radio, newspapers and television).

At the moment of registration, a document was issued that outlined the terms of voluntary registration of wild animals, beginning with what was registered, specie, number of specimen, and approximate age of the animals. During the registration process, the data provided was confirmed by a visit by three policemen to the residence, at which point these agents also confirmed the conditions of the animals. At this time, the caretaker was informed about the food to be furnished to the animal, the minimal space required by that species, and the basic hygiene necessary in the location where the animal would be kept. Also, information was restated regarding the legal prohibition against maintaining the animals in captivity, the restriction against the substitution of the animal by another, the prohibition against transporting them to another municipality, and the re-collection in case of mistreatment.

In Três Lagoas, in January 2002, 130 previously registered residences were selected at random and visited, in order to verify the status of the animals. The presence or absence of the wild animal registered in 1997, its destiny, and actual condition were recorded.

RESULTS

State policing of wildlife

During the years 1999, 2000, 2001 and 2002, ground patrolling can be singled out as the most common activity of the period, followed by blockades and responses to denouncements (TABLE 1). However, it was not possible to differentiate between specific enforcement activities by analyzing the documentation.

These actions resulted in the capturing of wild animals, cages and traps, firearms, meat and pelts of wild animals.

During this period 4,073 registrations were performed

resulting from enforcement activities, 2,718 (66.7%) wild animals were “collected” and 1,355 (33.3%) “confiscated.” The equivalent of 48.1% of the registrations originate from activities occurring in 37 state municipalities, more than half (2,601 – 63.86%) of the occurrences were registered in Campo Grande. The most notable of the rural municipalities were Jaraguari (366 – 8.9%), Três Lagoas (353 – 8.7%) and Dourados (160 – 3.9%) (FIGURE 1). These municipalities, along with Campo Grande, were responsible for 87.2% of the occurrences. It is important to note that the municipality of Jaraguari showed the

second highest frequency as a result of a single large seizing of canaries originating in Bolivia (346), which took place in 2001, but didn't have a regular pattern of occurrences during the other years of the study.

Species most frequently encountered in enforcement activities

It was noted that a total of 121 different species were registered by enforcement, most significantly birds, with 76 species and 2,463 individuals (60.5%), 35 species of mammals, with 884 individuals (21.7%) and 10 species of reptiles, with 726 individuals (17.8%). Of this total, 20 species represented 77.2% of the animals confiscated or collected (TABLE 2). The species most common among the birds were: parrots, Bolivian canaries, saffron finches, parakeets, lesser feed sinches and macaws. Among the mammals, the most notable were: common opossum, giant anteater, armadillo, lesser anteater, capybara, marmoset and capuchin monkey. Among the reptiles, most noted were: red-footed tortoise, geoffroy's side-necked turtle, common boa, unidentified snakes, common tegu and anaconda.

The record of violations of species threatened with extinction was small and didn't exceed 4% of the total, most notably the giant anteater and the lesser anteater. However, this registry could be underestimating the actual numbers because of the difficulty for enforcement agents to correctly identify such species. Generic designations (e.g. “deer” or “macaw”) did not allow an

TABLE 1: ACTIVITIES RELATED TO THE POLICING OF WILD ANIMAL TRAFFICKING CARRIED OUT BY THE 15TH BPMA - MATO GROSSO DO SUL, DURING THE PERIOD FROM 1999 TO 2002.

ACTIVITIES	YEAR				
	1999	2000	2001	2002	Total
Ground patrolling	2,156	2,532	2,500	2,894	10,082
Blockades	1,752	2,469	2,474	2,647	9,342
Responses to denouncements	1,320	1,656	1,749	1,573	6,298
Number of fines	987	1,086	1,374	1,083	4,530
Number confiscated and held	442	496	445	433	1,816
Confiscation of cages/traps	189	282	223	734	1,428
Wild animal meat (kg.)/(Lbs.)	567/258	120/55	416/189	197/90	1,300/592
Number of warnings	331	274	112	266	983
Confiscation of firearms	125	119	194	159	597
Terms of embargo/ban	53	69	45	57	224
Wild animal pelts	02	04	01	18	25

Source: 3rd section the 15th BPMA

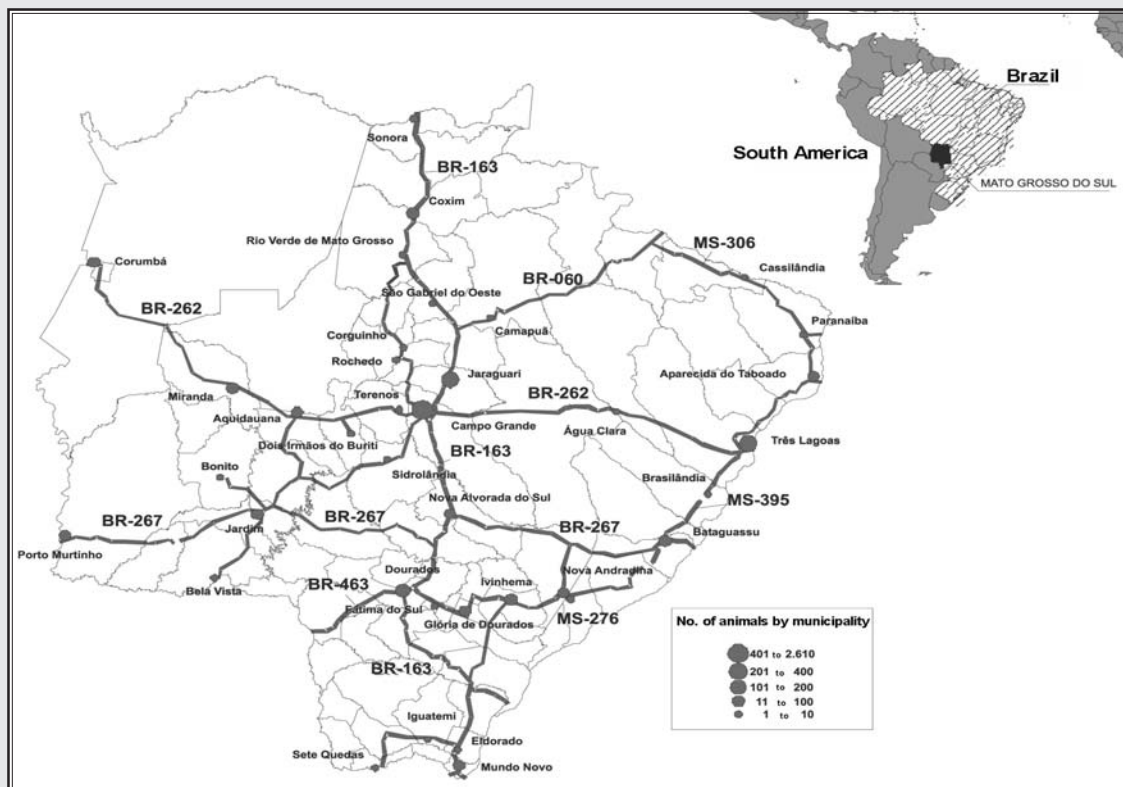


Figure 1: Number of wild animals confiscated or collected by the municipality of Mato Grosso do Sul, between 1999 and 2002.

identification of the specie, and made it difficult to verify if the animal belonged to an endangered species or not.

Fate of animals targeted by enforcement

The wild animals "collected" or "confiscated" were, for the most part, sent to CRAS (3,640 – 89.4%), followed by other destinations (433 – 10.6%). Of the total number of animals sent to CRAS, 2,601 individuals (63.8%) were the result of activities carried out in Campo Grande; another 1,039 individuals (25.5%) were from state rural municipalities. Some of the animals collected from the state's rural municipalities, being common to those locales, were released to their natural environment by the PMA, owing to the difficulties of their special care and maintenance and lack of a means to transport them to CRAS. In the years 1999 and 2000, there weren't reports of "other destinations" in the violations handled by units of the PMA located in the state's interior.

Wild animals in captivity

In Três Lagoas in 1997, 358 residences were registered with 668 wild animals kept as pets. Twenty-six species were recorded, of which the turquoise-fronted parrot was the most common, followed by the hooded siskin and the saffron finch (TABLE 3). These three species represent around 89% of the total, and are considered the most highly "prized." In 2002, 130 (27%) of the residences that were registered in 1997 in the municipality of Três Lagoas were visited. More than half (56%) did not show a difference in specie or number (n=80) of animals registered in 1997. In 22% (n=23) of the residences it was reported that all of the 49 animals had died, and in 19% (n=20) of the residences, 31 animals were stolen or disappeared from the location. In two residences, the 4 registered animals were illegally substituted by 4 animals of the same species.

In the municipality of Dourados 474 residences were registered, of which 325 (68.5%) were carried out in 1999 and 149 (31.5%) in 2000. Ten species comprising a total of 622 individuals were found, of which 435 (70%) were recorded in the first year and 187 (30%) in the second. The turquoise-fronted parrot was the most common (538 – 86.5%), followed by the blue-winged parrotlet (58 – 9.3%) and the white-eyed parakeets (9 – 1.4%).

In these two municipalities the numbers of animals registered were very close (668 in Três Lagoas and 622 in Dourados). However, the number of residences registered in Dourados (474) was 32% higher than those registered in Três Lagoas (358), indicating that, as an average, 1.3 animals were encountered per household in Dourados and 1.8 in Três Lagoas. The turquoise-fronted parrot was the most commonly encountered species in both municipalities, totalling 1,035 specimens (TABLE 3).

TABLE 2: SPECIES MOST COMMONLY CAUGHT BY ENVIRONMENTAL ENFORCEMENT IN MATO GROSSO DO SUL, BETWEEN 1999 AND 2002.

SPECIES	SCIENTIFIC NAME	TOTAL	%
Red-footed tortoise	<i>Geochelone carbonaria</i> e <i>G. denticulate</i>	446	11,9
Parrot	<i>Amazona aestiva</i> , <i>A. xanthops</i> e <i>A. amazonica</i>	439	10,8
Bolivian canary	-	346	8,5
Saffron finch	<i>Sicalis flaveola</i>	315	7,7
Common opossum	<i>Didelphis albiventris</i>	314	7,7
Parakeet	<i>Brotogeris chiriri</i> e <i>Myiopsitta monachus</i>	239	5,9
Geoffroy's side-necked turtle	<i>Phrynops geoffroanus</i>	112	2,7
Giant anteater	<i>Myrmecophaga tridactyla</i>	110	2,7
Lesser feed sinch	<i>Oryzoborus angolensis</i>	104	2,5
Blue-and-yellow-macaw /Green-winged macaw/ Hyacinth macaw	<i>Ara ararauna</i> , <i>A. chloroptera</i> e <i>Anodorhynchus hyacinthinus</i>	90	2,2
Toco toucan	<i>Ramphastos toco</i>	88	2,1
Peruvian canary	-	70	1,7
Nine-banded armadillo /Six-banded armadillo / Naked-tailed armadillo	<i>Dasytus novemcinctus</i> , <i>Euphractus sexcinctus</i> e <i>Cabassous unicinctus</i>	69	1,7
Hawk	-	65	1,6
Burrowing owl	<i>Speotyto cunicularia</i>	64	1,6
Lesser anteater	<i>Tamandua tetradactyla</i>	62	1,5
Marmoset	<i>Callithrix penicillata</i> e <i>C. jacchus</i>	50	1,2
Great kiskadee	<i>Pitangus sulphuratus</i>	47	1,1
Capybara	<i>Hydrochaeris hydrochaeris</i>	44	1,1
Chopi blackbird	<i>Gnorimopsar chopi</i>	41	1,0
Others	-	958	22,8
Total		4.073	100,0

Source: 3rd Section of the 15th BPMA

TABLE 3: SPECIES RECORDED IN TRÊS LAGOAS (1997) AND DOURADOS (1999 AND 2000).

NUMBERS	SCIENTIFIC NAME	Três Lagoas		Dourados	
		n	%	n	%
Turquoise-fronted parrot	<i>Amazona aestiva</i>	497	74,4	538	86,5
Hooded siskin	<i>Sarduelis magellanicus</i>	68	10,2	0	0,0
Saffron finch	<i>Sicalis flaveola</i>	28	4,2	3	0,5
Lesser feed sinch	<i>Oryzoborus angolensis</i>	19	2,8	0	0,0
Blue-and-yellow-macaw	<i>Ara ararauna</i>	14	2,1	0	0,0
Blue-winged parrotlet	<i>Forpus xanthropterygius</i>	0	0,0	58	9,3
White-eyed-parakeet	<i>Aratinga leucophthalmus</i>	0	0,0	9	1,4
Red-footed tortoise	<i>Geochelone carbonaria</i>	0	0,0	4	0,6
Others		42	6,3	10	1,6
Total		668	100	622	100

Source: 3rd section of the BPMA

DISCUSSION

Environmental enforcement activities in Mato Grosso do Sul

Facing the prospect of a reduction in biodiversity in the coming decades, there is an increasing interest in the development of projects to minimize the impact on the flora and fauna. In Mato Grosso do Sul, this can be seen in the history of environmental enforcement

activities documented by this study. Initially, the Environmental Preservation Institute of Mato Grosso do Sul (*Instituto de Preservação Ambiental de Mato Grosso do Sul* - INAMB) acted almost exclusively to combat the “leathermen,” however, the functions of the environmental police were later expanded to incorporate all enforcement operations regarding the flora and fauna, through an increase in operations to control predatory fishing and the trafficking of wild animals. According to what was presented in the WWF Report (1995), the process of making institutions obsolete by failing to update them, in addition to a lack of policy continuity, is a Brazilian reality, and there are scarce resources in the budgets provided to state and federal environmental organs. In Mato Grosso do Sul, the resources earmarked for the security program aren't equally distributed among the different units of special policing, such as the State Highway Police (*Policia Rodoviária Estadual*), and Environmental Police (*Policamento Ambiental*), this last developed by the 15th BPMA.

Another factor to be considered is the frequent rotating of policemen among the different units of state police. This rotation occurs, in general, as a result of a lack of selection criteria within the normalized structure of the Secretariat of Public Security (*Secretaria de Segurança Pública*), delivering policemen who are not adapted to the routines of environmental policing and which are later substituted. Also, the frequent transferals of officers and sergeants who occupy positions of command of the sub units, cause the request for transfer of numerous policemen and the arrival of new ones. Because of this, it is difficult to establish a force of police officers trained for different wildlife enforcement actions, and this negatively affects the execution of these activities. The actual enforcement infrastructure of the 15th BPMA can be seen in the pattern already established in the past, when it was the model for other states such as Amapá, Sergipe, Tocantins and Roraima. As was observed by Pinho and Nogueira (2000) in Cuiabá - MT, the lack of an enforcement infrastructure, the absence of a planning strategy and statistics regarding the animal trafficking, reduces the success of the actions. The same author reports that the governmental organs of Mato Grosso focus enforcement efforts on blockades sporadically raised on the roads, or set up as a result of public denouncements, as was seen in Mato Grosso do Sul.

The lack of an integrated system of information for the different environmental agencies responsible for the control, combating and enforcement activities in the state of Mato Grosso do Sul (15th BPMA, IBAMA and SEMA), has also caused a low action efficiency rate. This can be seen if the data released by state institutions (which, in general, present very different statistics) is compared to those obtained in the actions combating wild animal trafficking. It is the case that organizations

outside of the state frequently present incomplete or inaccurate data, citing, for example, commercial violations regarding wildlife in open markets in the city of Campo Grande, or also in rural municipalities indicated as locales associated with capture and sale of wild animals (RENCTAS, 2002b), which, in fact, does not correspond with reality, because no such market or store that openly sells these animals exists. The release of information that was not confirmed in the registries of two out of the three institutions responsible for the question (15th BPMA and CRAS), demonstrates the necessity for an integrated system among the organizations that systemizes and standardizes the data. The releasing of contradictory information confuses the public, causing discredit and diminishing the effectiveness of the actions.

Mato Grosso do Sul, beyond being nationally regarded as an “area of animal supply” (RENCTAS, 2002a), can also be regarded as a “trade route” for the international traffic of wild animals, as can be observed by the seizing of canaries originating in Bolivia and Peru, which were being transported for commerce in Brasília/DF and São Paulo/SP, respectively. According to the CRAS data (Alessandra Firmino, pers. comm.), nine macaws (five *Ara militaris* and four *Ara rubrogenis*) from Bolivia were confiscated in the municipality of Corumbá in 1996. Although the number of violations of this type can be considered to be low, it is important to point out that statistics of illicit actions tend to underestimate. This is owing to the Environmental Military Police's lack of infrastructure and also to the nature of these infractions, which are dispersed throughout the state and employ various means of transportation. When one considers that enforcement actions during the four years of the study resulted in the confiscation/ collection of just 4,073 animals, it can be assumed that many others were taken out of the state without being detected. It is also worthwhile to project that around 66% of these animals were received through enforcement as the result of unsolicited actions by the public (“collected animals”) and only 33% derived from acts considered to be illicit (“confiscated animals”).

The registry of actions related to fauna in less than half of the state municipalities (37 of 77) shows an enforcement-based action, probably as the result of operational questions and not necessarily due to the lack of this type of infraction in so many municipalities. Certainly, the higher percentage of animals collected or confiscated in Campo Grande (64%) is also related to operational considerations, since the capital is the headquarters of the 15th BPMA, which relies on good infrastructure exemplified, for instance, by a team selected and trained for wildlife enforcement, by its proximity to CRAS, by its higher level of public awareness and, consequently, higher number of denouncements. The rural municipalities possess just one reduced contingent of police that handles all types

of environmental violations at the same time. Even in those municipalities where the rate of collection or confiscation was more constant during the years of the study (Três Lagoas and Dourados), there wasn't a predetermined enforcement strategy, as was observed with other types of unlawfulness as in the case of Operation *Piracema* during the period when fishing is prohibited.

Other types of environmental crime combating operations are carried out annually, in accordance with the periods of their highest incidence (e.g. the period when fishing is prohibited, fishing high-season, burning season), however, the policing of wildlife, in general, happens as a result of responses to denouncements. Special actions are carried out according to the passing demands of the mating periods of the various species (October to February), in the northern regions of the state (municipalities of Costa Rica, Cassilândia and Paranaíba), southern regions (Ivinhema, Naviraí, Mundo Novo and greater Dourados), and on the secondary highways and roads that provide access to the Pantanal.

Most common species in enforcement actions

Countrywide, it is easy to perceive that birds still have the highest rate of any animal held as pets (RENCTAS, 2002a, WWF, 1995), which was confirmed in Mato Grosso do Sul, where during the four years of the study 76 species of birds were registered, with a total of 2,463 individuals (60%). The same was observed in southern Bahia (Martuscelli, 2000), the Psittacidae family (parrots, parakeets and macaws) also showed the highest rate among birds (18.86%), most notably the turquoise-fronted parrot (TABLE 2). This species is very popular as pets, owing to its highly colored plumage, ease of feeding, size and facility for imitating human speech. The same species was frequently in samplings of Neotropic Psittacidae commerce carried out in Barcelona, Spain (Guix et al., 1997) and represents the species most received by CRAS, with more than three thousand specimens over the last fifteen years. Since 1981, the turquoise-fronted parrot is included in Appendix II of the International Trade Convention of Flora and Fauna (CITES, 1973), as being a species which, despite not being endangered, could end up as such if its trade is not regulated (Seixas and Mourão, 2002).

The adaptation of some species to the urban environment, as well as the deforestation of the last remaining native vegetation in the environs of the cities, seems to contribute to the frequent appearance of certain species in environmental enforcement statistics. Among these the anteaters can be singled out in numbers which are very concerning (110 giant anteaters and 62 lesser anteaters), since they are already considered to be endangered in Brazil. These findings reinforce the necessity for more effective actions for the conservation of habitats, as a strategy

that is basic to the conservation of these and other species of native wildlife.

The difficulty in the proper identification and/or registration of species by the police can be a determining factor for the low rate of endangered species (4%) encountered during the study period. In the analyzed data, it was not possible to determine with precision, for various families, which species were registered by enforcement (as in the case of deer and macaws). Endangered species should receive special attention regarding the collection of information about their origins, in order to aid in the determination of their destination, and avoid the arbitrary release by the Environmental Military Police. These cases, without fail, should be delivered to CRAS for identification and determination of destination, with the purpose of adhering to conservation programs for the species. The difficulty in the identification of species is, without doubt, associated with the rotation and lack of special training of the police.

The fate of animals targeted by enforcement

The difficulty in obtaining an appropriate final destination for wild animals handled by enforcement is a discouragement. Operations that involve the confiscation of wildlife consist of long drawn-out stages, which span from the investigation of the denouncement and the apprehension of the violator in the act, until the procedural processing of the offender, sometimes carried out in neighboring municipalities. Once this has happened, the officer must care for the animals with food and proper treatment, as well as arrange for a means of transport to a more adequate location. In general, the sub units of the Environmental Military Police are not equipped for the maintenance of these animals, even for a short period of time, and do not have at their disposal rapid and adequate means of transport. On the other hand, unlike other states (WWF, 1995), Mato Grosso do Sul relies on CRAS, which, created in 1988, was one of the first triage centers for animals originating from enforcement operations. The existence of this institution represents a stimulus for state wildlife enforcement operations, because it makes possible for the confiscated animals to be sent to a locale where they will receive the specialized care of veterinarians, biologists, and animal technicians responsible for their recuperation and the determination of the most appropriate destination for them. According to CRAS data, since its creation more than 14 thousand animals have already been received, rehabilitated and sent to appropriate locations, of which, 62% were referred by the Environmental Military Police (Alessandra Firmino, pers. comm.).

Despite the fact that around 90% of the animals handled by enforcement during the four years of the study were sent to CRAS, the remaining group, because

of previously mentioned operational difficulties, received another fate from the police. It is worth noting that around 64% of the confiscations occurred in Campo Grande, where CRAS is located approximately 500 m. (1640 ft.) from the 15th BPMA headquarters. Operational problems seem to be responsible for the fates given to the animals by rural sub units. In other words, the difficulties in the special maintenance and care, and the lack of a means of transport whereby they could be sent to CRAS, causes the rural police to release around 10% of the animals, without previously administering triage and rehabilitation. This practice could bring about, in some cases, a negative outcome for the liberated animal or even for the preservation of its, or other, species living in the area. Among the associated risks we can single out the spreading of diseases, with the possible local extinction of the contaminated species, and the introduction to the locale of foreign species, which generates competition for resources among species.

Wild animals in captivity

In the last few years, there has been an increasing preoccupation on the part of authorities (federal, state and municipal), regarding the number of wild animals already in captivity. In 2001 IBAMA, through its Directorate of Wildlife and Fishing Resources (*Diretoria de Fauna e Recursos Pesqueiros*), initiated a study into the viability of drawing up a "Terms of the Domestic Keeping of Wild Animals" (*Termo de Guarda Doméstica de Animais Silvestres*). A pilot project was carried out by IBAMA in Paraná state in 1997, in which, via a state decree by the institution, it sought to register the illegal caretakers of wild animals. According to the Directorate of Fauna (*Diretoria de Fauna*) the experiment was troubling, since there were requests by 25 thousand people, and IBAMA was able to attend to only 10% of the petitioners. Another factor to be considered, according to an analysis by the same Directorate, is that the registration caused people who were not caring for an animal, to acquire one in order to be able to make the possession official. The decree was revoked. However, until today there exists a strong demand in the Paraná Wildlife Center (*Núcleo de Fauna do Paraná*) to resume this operation.

In Mato Grosso do Sul, the initiative of the 15th BPMA to register the caretakers of animals in the municipalities of Três Lagoas and Dourados aimed at understanding the realities of maintaining wild animals in captivity, in order to facilitate future possible actions. A relatively small number of species could be observed in the two municipalities (26 in Três Lagoas and 10 species in Dourados), with few individuals being maintained in captivity. However, the data confirmed the supposition that the turquoise-fronted parrot was the most common. This information suggests that special attention should be given to this species focusing on its future status.

The results lead one to believe that the initial misgiving, regarding the possibility that the registration caused a rise in the number of animals in captivity, did not occur. In only two residences (2% of the total) was an animal illegally substituted by another of the same species (turquoise-fronted parrot). In 22% of the residences illegal substitution did not occur when the animals were stolen, disappeared, or when the animal died.

Actions regarding the surveying or registration of animals in captivity must be carried out in combination with other actions of subsequent control, as well as the total support and cooperation among the institutions responsible for the question.

CONCLUSIONS/RECOMMENDATIONS

It is necessary to improve the qualifications of Environmental Military Police in terms of their capacity to identify the diverse species of native fauna and to utilize different methods of containment and transportation of the animals. Alternatively, a manual could be drawn up, with illustrations and basic guidelines about the handling of animals, to be given to the police during special training.

Another important factor is the adoption of normalized criteria within the Secretariat of Public Security, regarding the selection of police with an appropriate profile for the performance of environmental policing, making it possible to diminish the rotation of police and serve, in an efficient manner, the needs of the 15th BPMA.

The creation of a single integrated system for data storage, involving all of the institutions responsible for the question, is fundamental to improving activity management and the results achieved, with the goal of optimizing the use of human and financial resources.

The establishment of a strategy of continual enforcement in those municipalities with the highest incident rates of wild animal confiscation and collection would also increase the efficiency of police performance. In these cities there must be permanent trained teams available to carry out the daily activities of responding to denouncements regarding wildlife, in the style of Campo Grande.

An intensive enforcement plan to combat wild animal trafficking during the reproductive months, principally of the Psittacidae (parrots, parakeets and macaws), is fundamental to the reduction of trafficker activities regarding this group of species. Increasing the number of fixed and moveable blockades in the regions where these captures are most common, in association with environmental education campaigns, is also indispensable in the restraint of these activities.

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