

Research/Technical Note

Invertebrate (Araenae: Mygamolomorphae) Illegal Trade: An Ignored Side of Wildlife Trafficking

Ana Teresa Meireles Caldas, Marcelo Alves Dias, Marcelo Peres

Department of Biological Sciences, Catholic University of Salvador, Bahia, Brasil

Email address:

anateresa.m97@gmail.com (A. T. M. Caldas), marcelo.dias@ucsal.br (M. A. Dias), marcelo.peres@pro.ucsal.br (M. Peres)

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Abstract: Wildlife trafficking is in the top five of the most successful illegal activities now a days and one of the main responsible for biodiversity lost around the world. According to researches there are four categories that encourage wildlife market: animals to zoos and private collectors, for scientific purposes/ biopiracy, for pet shops and animals as products and subproducts. Although the very low focus on invertebrate trades, more specifically in spiders, they are a big source of money in biopiracy and sales to private collectors. Therefore, the purpose of this work it was registered a trafficking case of a recent described specie of tarantula in northeast region of Bahia, Brazil as well as the impacts of it on lost and knowledge of local biodiversity. Also brings the occurrence of a possible disease still without diagnosis or specific causes in one of the individuals of this apprehension. Fifty-two specimens of *Pachistopelma bromelicola* were seized by IBAMA being transported inside matchboxes in precarious conditions to be sold in Slovakia, Europe. After the apprehension, the samples were taken to the Animal Ecology and Conservation Centre (ECOA) in Catholic University of Salvador where they were kept in environmental enrichment places close to natural conditions being monitored daily considering specially behavior and health. Even though the good conditions provided only 13% of the samples survived, despite seem a low number, this was a high value if compares with IBAMA's index of apprehended animal's survival. Despite the substantial biodiversity in Brazil, the continuous withdrawal of wild animals added to the impossibility of returning the rescued animals to the natural environment can cause in a few years a huge ecological, economic and social damage in the country, also bringing irreparable consequences for local fauna.

Keywords: Biopiracy, Tarantulas, *Pachistopelma bromelicola*, Diseases, Tumor

1. Introduction

Wildlife trafficking is in the top five of the most successful illegal activities now a days, moving billions of dollars every year and just profitably losing for drugs, counterfeiting and human and oil traffic [1]. Brazil directly takes part of this activity as one of the major exporters mainly because of your large diversity associated with a bad social situation of most part of the population and influence of organized criminal groups [2]. The flow of wildlife trafficking occurs north/northeast to south/southeast, where most part of the clients are [3], showing the strength of the national wildlife trafficking market and being the main gateway to international trades [2].

Around 30% of captured animals are sent abroad [4] especially to USA (biggest consumer of wildlife in the world), Japan and European countries [5]. A native Mygalomorphae

specie for example can be cheaply purchase in Amazonian communities for less than US\$2 [6] and sold outdoors for more than US\$300 [7]. This factor influences many foreigners to come to our country and participate in this illicit market [8]. The value of specie is determined for your rarity and extinction level, rare animals as the Mygalomorphae above are more seek because it shows more power to the owner and are more lucrative to the seller [8].

According to researches there are four categories that encourage wildlife market around the world: animals to zoos and private collectors, for scientific purposes/ biopiracy, for pet shops and finally animals as products and subproducts [9].

Of all captured animals just about 10% gets in your final destiny alive, the reason it is because between the process of capture, handling and transport the animal pass through a lot of stress and mistreatment [4]. They remain in small and tight

places huddled to others (of the same or different species) and suffer all kinds of abuses from their captors as mutilation, blindness, administration of tranquilizers and alcoholic beverages [8]. From the animals that IBAMA (Brazilian Institute of the Environment and Renewable Natural Resources), Federal Police and Environmental Police get to save just above 1% remain alive [9].

Wildlife trafficking is considered one of the biggest causes of specie's diversity lost along with environmental degradation and introduction of exotic species [4]. It is assumed that around 12 to 38 million of animals are being taken from our territory every year [4] with birds representing 80% of this estimate [10]. From the 1.173 taxa officially recognized as threatened 234 are birds, 110 are mammals, 80 are reptiles, 41 are amphibians, 408 are fishes and 299 are invertebrates. There are 448 species considered vulnerable, 406 in danger, 318 critically in danger and 1 extinct in nature [14].

Even though the traffic can affect all the taxa, awareness programs have an almost exclusive focus on vertebrates. There are just a few invertebrate's records and studies in wildlife trafficking and the general knowledge of this group is low as well even with their important role in the ecosystem and in human being's life. Currently they represent 25% of the threatened Brazilian's species with this estimate rising along the years [14].

1.1. Spiders Trafficking

Among the invertebrates, the spiders stand out, the reason why is because this animals are very search for scientific and pharmacological purposes. Species as brown spider (*Loxosceles sp.*) have a lot of interest from those labs, which pay more than US\$20.000/gram for these animals's venous [12].

Besides biopiracy another famous field of use from spiders is as pet animals. Tarantulas are the most commercialized group for this purpose mainly because of your peculiar coloring, easy handling and cares and specially your exoticism [9]. The Theraphosidae family specie's are the most wanted inside the Mygalomorphs, one juvenile individual can cost around US\$100 [9]. This preference is confirmed in the Brazilian Government environmental Agency's report where eight species of Mygalomorphae were considered in dangerous of extinction until 2014 and six of those were Theraphosids [11]. The biggest part of capture tarantulas are taken out of Brazil and goes especially to foreign collector in USA and European countries, helping propagate the international traffic mentioned before.

There is not enough studies and knowledge about this Mygalomorphs in additional it is a very difficult group to establish taxonomically and phylogenetic changes and identification of new species are currently made [13]. This

difficulty is exacerbate by the removal of individuals from their natural habitat to the illegal market because in spite of the big flow the number of apprehensions are very low, mainly because of their small sizes if compares to other taxa, what helps the transport by postal services which are not subject to strict supervision [9].

1.2. New Specie

Pachistopelma bromelicola [14] is an example of recently identification of tarantula's specie. This one was described for the first time in 2012 and it was inserted in the gender of *Pachistopelma* with *Pachistopelma rufonigrum* (Pocock, 1901) only. Its specific name is due to the characteristic habit of spending their life within bromeliads; however, there is almost any knowledge about the natural history of the specie, being the only reference article the Bertani's specie description one. Its occurrence is register in the northeast of Bahia and in the state of Sergipe, mainly in coastal regions [14].

The purpose of this work was register the occurrence of a trafficking case with this recently identified specie in northeast region of Bahia, Brazil as well as the impacts of it on lost and knowledge of local biodiversity.

2. Material and Methods

On august seventh of 2016, fifty-two specimens of *Pachistopelma bromelicola* were seized by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) at Brazilian Post Correios of Serrinha County, northeast region of Bahia State. The animals were being transported inside matchboxes in precarious conditions (Figure 1). According to IBAMA the spiders would be sold in Slovakia, Europe.

After the apprehension, the samples were taken to the Animal Ecology and Conservation Centre (ECO) in Catholic University of Salvador. Thirty of the samples got in the place already dead, possibly because of travel conditions and packaging. The twenty-two spiders that get in the Centre alive (42% of the total number) were placed in biggest recipients where regularly food was provided. Even then, the samples continue to gradually die in the first weeks until only 10 individuals (19% of the total) were left. These individuals were transfer to environmental enrichment places close to natural conditions, with adequate humid, substrate and space. The deaths stopped for a while and 40% (4 individuals) of the survive animals molting, showing a possible good health condition and stability since this behavior is commonly an indicator of health. However after 1 month the deaths came back to occur without any apparent reasons, although none of the animals that molt died.



Figure 1. The matchboxes where the specimens of trafficked spiders were packed.

3. Results and Discussion

The high indexes of deaths in these captive spiders have been very intriguing, whereas the tarantulas are likely to be resistant in captivity. In other hand two recent publications [15 - 16] report innumerable captive tarantula's diseases, mainly in wild-caught individuals. Many times these diseases can go unnoticed by keepers due to lack of striking symptoms.

After two months monitoring these animals it was noticed that one sample of *P. bromelicola* showed a protuberance similar to a "tumor" in the opistosom. Five months later from the discovery the "tumor" is still growing although the spider remains with normal alimentary habits and behavior what is intriguing the researchers since similar diseases reported in literature reveal a slight changing in posture and behavior and a death of the animal in a few days or weeks after noticing some visual abnormality. Instructions from specialists were to wait until the animal dies and send it to specialized labs to a more accurate examination.



Figure 2. Specimen of *Pachistopelma bromelicola* with a tumor in the opistosom.

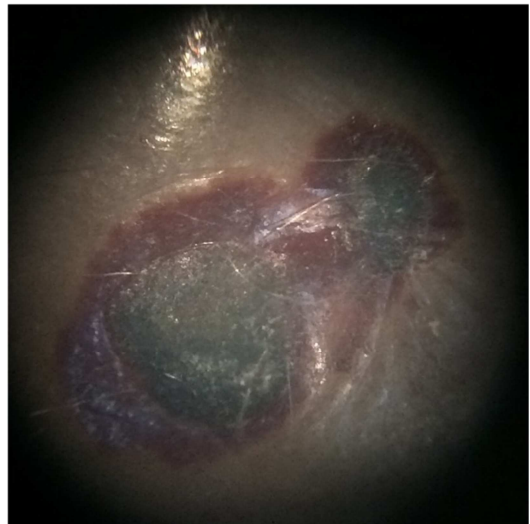


Figure 3. Details of the tumor located in the opistosom.

From the initial 52 apprehended spiders only seven (13% of the total) survived, a high value if compares with IBAMA's index of apprehended animal's survival. Daily monitoring considering specially behavior and health is performed on the seven samples left. Unfortunately the survival rate of rescued animals is very low, even when it is possible to archiving a long-lasting stability there are just a few well-succeed cases of animal's reintroduction to your natural habitat (IAP, 2003). The main reason is the lack of criteria and evaluations before the release, besides the difficult in the animal's readaptation after a long period in captivity. Reintroduction animal's mortality rate is very high; in other worlds, normally it ends up bringing low or no benefit to the specie in question (IAP, 2003).

With the invertebrates this difficult of readaptation is not the problem, the biggest concern in the case of *P. bromelicola* for example is actually the possibility of these animals being sick and infect natural populations. The health losses are

among the three main ramifications of negative interferences brought by the wildlife traffic along with ecologic and economic losses introducing diseases in places where these animals are exotics, infecting native animals, domestic breeding and even human beings (Destro *et al.*, 2012).

4. Conclusion

This case shows that even after apprehension there are still many steps to be solved about wildlife trafficking. Despite the substantial biodiversity in Brazil, the continuous withdrawal of wild animals added to the impossibility of returning the rescued animals to the natural environment can cause in a few years a huge ecological, economic and social damage in the country, also bringing irreparable consequences for local fauna.

In this perspective, it is clearly noticed the need to go deeper into researches on wildlife trafficking, especially on those animals that still don't have a lot of data and knowledge about it, in order to bring solutions that control this problem. The actions carried out by environmental protection agencies are important to prevent this kind of operation that without a fiscalization policy would occur in an unbridled way, and these new researches can help increasing the methods used and filling some gaps.

Besides, it is also needed more public awareness campaigns on the consequences that wildlife trafficking brings and the spread of techniques that shows a sustainable use of biodiversity involving the communities that lay on wildlife trafficking to maintain themselves for lack of other options.

All of these measures combined can possibly decrease the high rates of wildlife trafficking reported today.

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