

Restrain of birds with bottles of polyethylene terephthalate, tested in red-browed from the Atlantic Forest

Contenção de aves com garrafas de politereftalato de etileno, testado em papagaios-chauá (Amazona rhodocorytha, Salvadori, 1890) da Mata Atlântica

M.A.F. Bianchi¹, R.H. Mello², H. Bianchi³, J.L. Bermond Júnior², P.A.F. Ibrahim⁴

¹Centro Universitário do Espírito Santo – UNESC – Colatina, ES

²Aluno de graduação – Centro Universitário do Espírito Santo –UNESC– Colatina, ES

³Instituto Federal do Espírito Santo – IFES – Vitória, ES

⁴Aluno de graduação –Universidade Federal do Espírito Santo –UFES– Vitória, ES

ABSTRACT

In wild animals, containment is the moment of greatest stress caused by the investigator to the animal due to its natural resistance to the moment of capture, handling, containment and transport, attitudes frankly contrary to his nature. In birds, the restraint must meet certain criteria in order to control the animal's movements, avoiding trauma at the same time that you need to keep your breathing amplitude. The high risk of death during the restraint of these animals raised the need to design a device, from bottles of poly ethylene terephthalate (PET), for containing parrots-browed Amazon (*Amazona rhodocorytha*), a parrot endemic to the Atlantic Forest in southeastern Brazil, and endangered with extinction, which allowed the observation of respiration, the reduction of handling time of birds for collection of biological material, and consequent reduction of stress and risk of death during the evaluation of several biological data and health of the bird. The PET bottle container can be used as a model for any bird, provided it suits the size of the animal.

Keywords: wild birds, physical restraint, stress control, PET, recycling

RESUMO

*Em animais silvestres, a contenção é o momento de maior estresse promovido pelo pesquisador ao animal, devido à resistência natural ao momento da captura, ao manuseio, à contenção e ao transporte, atitudes francamente contrárias à sua índole. Em aves, a contenção deve obedecer a alguns critérios, com o objetivo de controlar os movimentos do animal, evitando traumas, ao mesmo tempo em que é preciso manter sua amplitude respiratória. O alto risco de morte, durante a contenção desses animais, suscitou a concepção de um dispositivo, proveniente de garrafas de politereftalato de etileno (PET), para a contenção de papagaios-chauá (*Amazona rhodocorytha*), psitacédeo endêmico da Mata Atlântica, na região Sudeste do Brasil, e ameaçado de extinção. Esse dispositivo permitiu a observação dos movimentos respiratórios, a diminuição do tempo de manuseio das aves, para coleta de materiais biológicos, e a consequente redução do estresse e dos riscos de morte, durante a avaliação de diversos dados biológicos e sanitários dessa ave. Tal contenção pode ser utilizada como modelo para qualquer outra ave, desde que se adapte o tamanho do animal, ao recipiente de garrafa PET.*

Palavras-chave: aves silvestres, contenção física, controle de estresse, garrafas PET, reciclagem

INTRODUCTION

Containment is the moment of greatest stress in the life of a wild animal, however, it is necessary for various management practices, such as identification, clinical examination, collection of biological material and transportation. At that

time, animals may present some clinical manifestations, known as stress syndrome, malignant hyperthermia or capture myopathy, which can result in the death of the animal (Carramenha and Carregaro, 2012).

In birds, the containment aims to control the movements so you can manipulate it and, at the

Recebido em 22 de julho de 2015

Aceito em 24 de novembro de 2015

E-mail: monicavets@gmail.com

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same time, protect people from possible injury caused by beak, claw and etc. (Werther, 2008). A good physical restraint of wild birds has three goals: not to hurt the bird, not pose risks to the operator and facilitate the implementation of complementary and physical examinations (Xavier, 2012). To start a restraint it is important to evaluate behavior and anatomy of the bird so that you can later proceed with the restraint (Werther, 2008).

There are two containment methods used involving physical and chemical methods, or a combination of both techniques. The chemical containment refers to the state induced by drugs that produce behavioral changes, sedation, analgesia and muscle relaxation. However, there are currently no ideal drugs that promote such changes in all animals (Bertozzo *et al.*, 2008). As for the physical restraint, several methods have been developed. In larger parrots such as macaws, parrots, cockatoos and others, the mechanisms used to contain them are based on the use of cloths or towels and leather gloves, however, leather gloves significantly reduce tactile sensitivity. To contain them it is recommended that drinkers, feeders and perches be removed to avoid or minimize possible injuries (Silva, 2010).

It is important to emphasize that during physical restraint it is important to avoid compression of the chest region because the birds have no diaphragm, and the respiratory movements are promoted primarily by activity of the intercostal muscles and chest, resulting in serious risks during chest compression, his breath is difficult, precisely at the moment of greatest need oxygen uptake, stress and physical wear and aerobic consumption in an attempt to break free (Dyer and Cervasio, 2008).

There are different ways to escape or defend from birds when faced with predators. The main weapon of defense of parrot is the beak, which depending on the size of the animal, can cause serious injuries to the person who handles them (Weiss and Wardrop, 2012; Grespan and Raso, 2014).

To catch a psittacid a towel can be used, which is thrown on the bird (Grespan and Raso, 2014) so that it covers its head, causing it to lose its sight (Jepson, 2010). A stock of towels of various

sizes and thicknesses must always be available so you can perform the necessary tests and procedures. It is not recommended to use the same towel for more than one bird, as there is the possibility of spreading disease (Tully *et al.*, 2010). Once the towel is covering the bird, hold his back with one hand and with the index finger and thumb of your other hand clinging to head, promote its immobilization. It is important to be careful not to strain to push the bird (Jepson, 2010; Grespan and Raso, 2014), for it can generate asphyxiation Keel compression (Weiss and Wardrop, 2012).

Leather scrap gloves should not be used to contain some psittacidae, because they reduce the sensitivity of the veterinarian, and do not allow comfortable handling of the bird (Tully *et al.*, 2010). The stress that is excessively generated in the animal over the course of capture and restraint, especially those who are not accustomed to handling or who are ill, could damage their health and also change their hematological indices (Weiss and Wardrop, 2012) such as leading to the production of artifacts in hematological tests, the main one being heterophilia by stress caused by the release of adrenaline and steroids (Tarcitano, 2010).

During the procedure the thorax and abdomen should be free, avoiding circulatory and respiratory collapse, derived from the stress to which the bird is being submitted (Grespan and Raso, 2014).

Nets and dip nets of various sizes can help to capture a bird that has escaped containment quickly. In addition to the appropriate network, the experience of those who are using it greatly decreases the risk of injury and damage to the bird (Tully *et al.*, 2010).

The bottle of polyethylene terephthalate (PET) is one of the more produced thermoplastic in the world, reaching in the 90 world production 2.4 x10¹⁰ kilograms. In Brazil, the main use of PET is for the food industry, reaching 71%, and in the Brazilian market 32% of these are intended for packaging carbonated beverages. Until the 60s the polymer was not part of significant composition of municipal solid waste (MSW), since 2005 20% of MSW mass is generated by this material, the main ones being: the polypropylene (PP), the Polyvinyl Chloride

(PVC) and PET, the latter corresponding to 20% of the polymers found in MSW. An important problem of the use of PET is that its products have useful life as short packets and their degradation time is very long in the environment, causing it to occupy a large part of landfills. The impact that the polymer causes to the environment is directly linked to their improper disposal, so the solution to minimize this impact is recycling the product (Romão, 2009). The use of post-consumer PET bottles by the recycling craft, with the production of direct products, is a way to bring not only environmental, but also social and economic benefits as a source of employment and income for populations (Castro et al., 2012).

This study aims to report a new method of bird containment, using as a model browed Amazon parrot in recyclable PET bottle packaging, where it is possible to minimize the chances of injury to the animals involved, as well as easy handling and the established clinical approaches by the veterinarian.

MATERIAL AND METHODS

Thirty-five clinically healthy animals of the *Amazon rhodocorytha* (red brown parrot) genre, of different ages and of indeterminate sex, were used for referencing the blood profile, karyotyping for defining sexual gender and cloacal swab. Twenty-eight birds belonged to the live collection of the Museum of Biology Professor Mello Leitao, located in Santa Teresa,

in the state of Espírito Santo (ES), Atlantic Forest region the southeast of Brazil. Seven other birds came from the Conservationist Dr. Vasconcelos Pergentino located in the municipality of Colatina (ES). The animals were evaluated with the approval of ICMBIO at SISBIO under registration number 38308-1, and the CEUA under approval number 196180/2013/3.

For catching, the birds were standardized using physical restraint, performed by means of fine-mesh net, leather scrap gloves and the restraint instrument developed for this study. The device consisted of a bottle of polyethylene terephthalate (PET), two (2) and three (3) liters depending on the size of the specimen contained.

The prototype was designed as (Figure 1). A cut was done near the threading of the bottle, in order to preserve the maximum of the tapered end. The diameter of the upper opening is only necessary for the animal's head exposition, so that the wings remain inside the containment apparatus. On the side of the bottle three cutting lines are made, forming a reversible opening where the animal wing will go out. All surfaces are then protected by bands of tape, aiming to prevent injuries by sharp edges that come in to contact with birds. The base of the packaging is removed to permit the entry of the animal. The more transparent the PET container, the more favorable it is to the animal viewing and its entire behavior during handling (Figure 2, 3, 4).

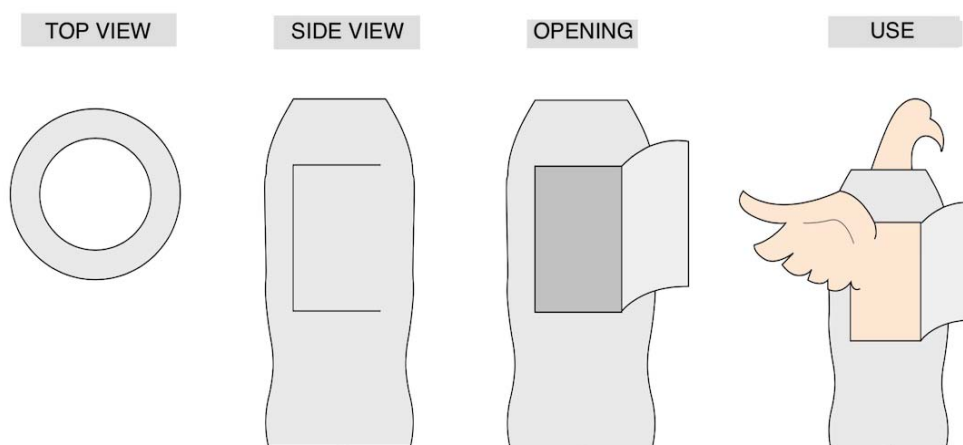


Figure 1. Schematic drawing of the device created for immobilization of birds.
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Figure 2. Containment of a red-browed parrot using the device developed with PET.



Figure 3. Identification banding under restraint.



Figure 4. cloacal swab under restraint.

RESULTS AND DISCUSSION

The device efficiently made for the containment of wild birds has met the security parameters discussed by Grespan and Raso (2014),

maintaining the immobility of the animal, reducing risk of errors and accidents, such as claws and beak. In addition to enabling visualization of respiratory movements, the artifact allowed the birds to use their total

respiratory amplitude, keeping the sternum and air sacs free of manual pressure recommended by the researched authors (Jepson, 2010; Grespan and Raso, 2014).

The use of a physical restraint device also shortened the time spent on the entire sampling procedure, reducing levels of stress caused to the animal, which, according to Xavier (2012), can change the animal's homeostasis, influencing their hematological results.

CONCLUSION

The device made from PET bottles was effective in containing the red-browed parrot, promoting a reduction of stress provided by the containment and management of these animals, while collecting samples. The device utilization also reduced the animal manipulation time, which was very positive, since it protects the animal from releasing stress hormones. Moreover, the apparatus is able to ensure the physical integrity of the animal and the handler, even one unaccustomed to the handling procedure. The ease and safety found in this study suggested to extrapolate this procedure for any wild bird, simply by adapting the size of the PET device.

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