

# PHYSICAL CAPTURE AND CHEMICAL IMMOBILIZATION PROCEDURES FOR A MAMMAL WITH SINGULAR ANATOMY: THE GIANT ANTEATER (MYRMECOPHAGA TRIDACTYLA)

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## RESUMO

Giant anteater (*Myrmecophaga tridactyla*), the largest representative of the xenarthrans, is classified as Vulnerable by the IUCN red list. Their unique anatomy and physiological characteristics, such as relatively low basal metabolic rates, make xenarthrans challenging to anesthetize and fit with tracking devices. This study aimed to develop, describe, and evaluate physical capture and chemical immobilization protocols adequate for field conditions that enable the harnessing of free-ranging giant anteaters with GPS devices and to collect biological samples. Between June 2013 and July 2019, a total of 68 wild giant anteaters (15 from Pantanal and 53 from de Cerrado of the state of Mato Grosso do Sul, Brazil) were physically captured using two long-handled-dip-nets. When the animal was properly restrained inside the two dip-nets, the veterinarian was able to safely apply an intramuscular anesthetic injection into its hind limbs. Chemical immobilization was performed applying the combination protocol (BDM): butorphanol tartrate (0.1 mg/kg), detomidine hydrochloride (0.1 mg/kg) and midazolam hydrochloride (0.2 mg/kg). Whenever extra time was necessary, supplementary doses of BDM were used (0,03mg/kg of butorphanol, 0,03mg/kg of detomidine, and 0,06 mg/kg of midazolam). After anesthetic induction, the first procedure before any manipulation of the individual was wrapping and completely immobilizing its front claws using bandaging tape. The animal was then weighted, and physical exams were performed to evaluate health conditions. Samples were also collected. Only adult individuals considered in good health by the team received a GPS harness. Vital signs were monitored during anesthesia every 10 minutes. For anesthetic reversal procedures, all individuals received the antagonist combination (NYF): naloxone hydrochloride (0.02 mg/kg), yohimbine hydrochloride (0.125 mg/kg), and flumazenil (0.01 mg/kg) through intravenous or deep intramuscular injection. Animals were kept in crates until complete recovery and were released at the same capture location. Average body mass of adult individuals was  $32.26 \pm 3.52$  kg and did not differ between sexes or study areas. Average rectal temperature was  $34.58 \pm 2.24$  °C, heart rate was  $43.31 \pm 9.15$  bpm, respiratory rate  $9.48 \pm 10.62$  bpm, and oxygen saturation values  $85.55 \pm 10.13$  %. Vital signs did not differ between adult individuals of different sexes. Induction time was  $9 \pm 5.4$  min, maintenance time without supplementary doses was  $50 \pm 6.38$  min, maintenance time with supplementary doses was  $92.4 \pm 19.8$  min, and recovery time was  $3 \pm 1.8$  min (intravenous injection) and  $13.8 \pm 13.2$  min (intramuscular). Anesthesia time did not differ between sexes. BDM protocol was considered satisfactory and, with supplementation, provided enough time to complete the procedures of about  $75 \pm 5.49$  min. This protocol provided rapid, smooth inductions and a wide margin of safety. Physical capture method and the chemical immobilization protocol were considered efficient, safe, highly feasible, and can be completely antagonized, promoting smooth and rapid recoveries.

**PALAVRAS-CHAVE:** Anesthesia, Free-animals, Restraint, Wildlife, Xenarthra

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