Laboratory Animal Science

Device for Capture and Restraint of Nonhuman Primates[1,2,3]

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Summary | A device was developed which allowed the isolation, capture, and restraint of individual stumptail macaques (*Macaca arctoides*) living in a social group. Capture and restraint was accomplished with minimum stress to the animals and minimum risk to animal handlers. The use of positive reinforcement in the training regime contributed to reliable daily entrance into the capture device.

Key Words | Animal restraint — Restraining cage — Animal caging — *Macaca*

Experimental manipulation of nonhuman primates often confronts the researcher with a number of practical problems, especially when animals are group-living. For many types of experiments, capture and handling primates must be done with a minimum amount of stress to the animal and maximum protection for the handler (1). An animal capture and restraint device was developed that allows one to: (1) remove a single animal from a group without using nets to capture the animal; (2) treat a diseased animal without having to remove the individual from its social group; (3) routinely examine animals and administer subcutaneous tuberculin tests with minimum stress; (4) utilize group-living animals to study the effects of acute or chronic administration of drugs on social behavior; and (5) obtain samples of body fluids for analysis. The purpose of this paper is to describe the capture and restraint device.

Materials and Methods

The animals, stumptail macaques (*Macaca arctoides*), lived in a social group within a 28.4 x 32.7 m outdoor enclosure which was attached to a 4.4 x 12.2 m environmentally controlled indoor animal housing unit. The group consisted of 36 animals, including four adult males (based on full dentition, developed temporal musculature, and general physical conformation), 18 adult females (cycling at about 4 years of age), one subadult male (4-5 years), three subadult females (3-4 years), three juvenile males (2-4 years), two juvenile females (2-3 years), three immature males, and two immature females (birth-2 years).

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The capture device was fabricated from 0.635-cm sheet aluminum for all major sections. The doors and restraint cage were fabricated from 0.953-cm aluminum for additional strength. All bars were fashioned from 1.77-cm diameter aluminum rods. Figure 1 shows a view of the entire device. Animals moved from the outdoor enclosure into the device via a 0.38 m tunnel (Figure 1, 1) and a manually-operated sliding door. Once inside, the animals could be retained in a 2.84-m^2 enclosure (Figure 1, 2) and, subsequently, moved singly or in pairs into a smaller area (Figure 1, 3). From the latter, the animals moved singly through a small 0.42-m^2 tunnel (Figure 1, 4) and then climbed upward into the restraint cage (Figure 1, 5). A sliding metal panel (Figure 1, 6) was closed behind the animal to form the bottom of the restraint cage. Alternatively, animals could be moved into a transport box through the sliding door (Figure 1, 7) at the end of the last holding tunnel.

When positioned in the restraint cage, the animal was examined visually, restrained using the squeeze device, or given experimental treatment. The rear portion of the restraint cage consisted of aluminum bars spaced 3.81 cm apart on a sliding frame, affording further manipulative control. To restrain an animal, the rear portion was pulled forward (Figure 1, 8) and the animal rendered immobile. The restraint cage was fitted with a small sliding door (Figure 1, 9) to allow the removal of an infant clinging to its mother, or to grasp an animal's leg for venipuncture. In addition, a large sliding door (0.35 x 0.28 m) on the side of the restraint cage (Figure 1, 10) permitted removal of the animal from the device. For experiments involving the injection of drugs, an alternative procedure was used in which animals were trained to extend an arm through a small circular opening (Figure 1, 11), to receive an intramuscular injection using methods described previously (2). After experimental treatment or examination, the animals exited the restraint cage via a sliding door (Figure 1, 12) in the side of the restraint cage and

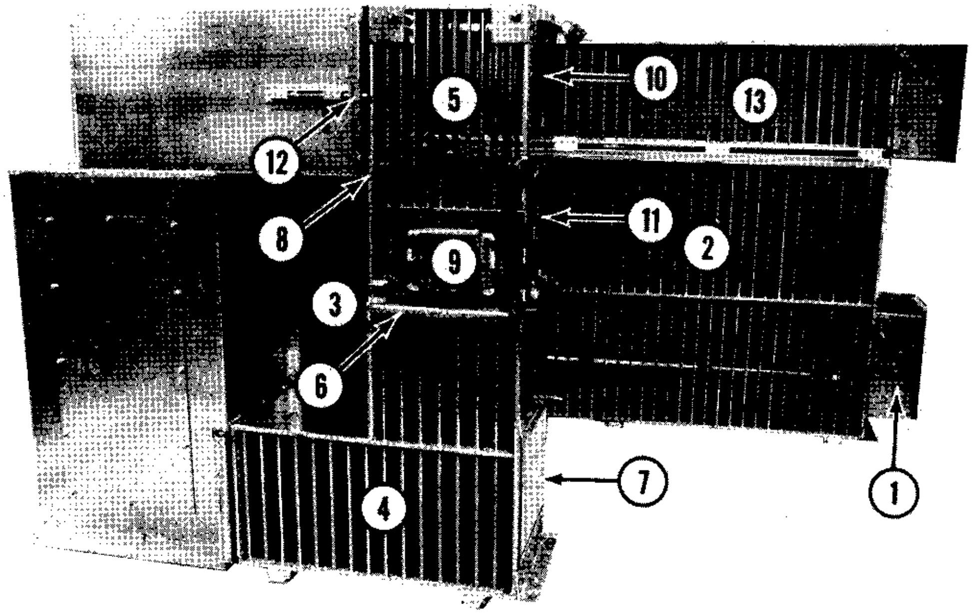

Figure 1
View of animal capture unit. Shown are entrance tunnel (1), initial holding area (2), secondary holding area (3), final holding area (4), restraint cage (5), sliding cage bottom (6), lower exit door (7), restraint device (8), sliding door for infant removal (9), sliding door for removal of treated animals (10), opening for intramuscular injection (11), exit door (12), and exit tunnel (13).

returned to the outdoor enclosure through the exit tunnel (Figure 1, 13).

Discussion

The use of this type of capture and restraint device has obvious advantages over more traditional methods. By entering the capture device on their own, animals need not be chased by animal handlers with nets. Also, there is less physical contact between the animals and the handler. With the device, animals can be manipulated in a way that induces the minimum amount of stress and disruption to the group.

Animals learned quickly to go into the capture device and to be processed through it. In the early stages of training, offering preferred food items had little value in enticing animals into the capture unit. Instead, it was helpful to concentrate training on the lead animals, since the remainder of the group would follow them. When a subgroup of animals entered the capture device, for example, they were provided a route for speedy return to the group, and this access to the group may have served to positively reinforce entrance into the device. Subsequently, animals may also have been entering the capture device to receive a preferred food item. Once the animals were trained, the entire group or a desired subgroup of animals entered the unit voluntarily when the entrance tunnel was opened each day.

References

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