Catching Animals Who Have Escaped from Their Primary Enclosure: A Discussion by the Laboratory Animal Refinement & Enrichment Forum

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"What is the best strategy to capture animals who escape from their primary enclosure? It's my experience with group- and single-housed rhesus and stump-tailed macaques that catching animals who get loose can be a very traumatic, chaotic event not only for the animal who is free but for all the animals of the room. However, this is not really necessary. It all depends on the personality of the attending care personnel. Some people freak out and create a real mess shouting, scaring the escapee with broom sticks or trying to catch the escapee with big nets, while other people remain calm and quasi-mesmerize the disoriented animal into entering a transfer cage or simply returning back into the home cage or jumping into an open empty cage baited with favored food . " (Reinhardt)

"Talk about timing! We had a rhesus macaque get loose this morning. It was one of our singly housed subadult males with an attitude. We have just recently purchased some new, fancy nets. However, through patience, nerve and a lot of praying to the macaque gods we got the male to jump into an empty, top cage that we had thrown a bunch of fruit into. It took about 15 minutes of coaxing for this to happen. We tried spiking a piece of banana with ketamine but he could taste it and spat it out. He is one of our more grouchy monks, and he sat on top of the cages and made aggressive expressions at us (there were two of us in the room). On two occasions he started getting into squabbles with some of the other monks in the room but we were fortunately able to distract him and redirect his attention. Just as a side note, we use a type of padlock that requires the lock mechanism to be slid onto a curved bar type thing. The lock was fastened in such a way that the monk was able to open his cage door about 6 inches or so and was able to squeeze out. Nothing like walking into a room with a loose macaque male and all the cage doors have padlocks on them!" (Feurtado)

"I was told by my supervisor that you have to chase monkeys who escape until they get so tired and miserable that they will voluntarily go back into their cages, and that such a stressful experience will make it less likely that they will escape again in the future. I remember a student who was scolded for using an apple (since it was a 'reward') to lure a female rhesus monkey back home after we had chased her around for 20 minutes. The monkey ate the apple and finally walked into her cage. The problem with using so much negative reinforcement was that it typically created quite a chaotic situation. Sometimes the animals who did not escape got so excited that they started fighting with the escapee or their cage companions. We then ended up with the veterinarian not only taking care of the injuries of the escapee but also of fight wounds of other monkeys in the room. Looking back, I feel bad, because I took pride in the fact that I caught quite a few female rhesus monkeys and was good at it. Hand-catching required leather gloves in the room, something that surely stressed every animal present. Now that I have been studying positive reinforcement, I see that there is probably a much better way of catching loose monkeys such as maintaining a trusting relationship and taking the time to lure an animal back with positive reinforcement. Although it may be argued that this may take more time initially, a calm and less-stressful scenario could mean less injuries for the monkeys overall." (Kerwin)

"I am staggered to hear that you chase them until they drop. A far better approach is to remain calm and quiet, preferably with only one person in the room, and get the animal's home cage door(s) wide open. Since nonhuman primates normally retreat from you, it's quite easy to make them move away from you into the direction of their home cage. It is my experience that they are usually only too pleased to get back home. If this fails after a few attempts you may need to revert to the net, but this causes panic and should be avoided if at all possible." (Francis)

"The animals presumably escape not because they really want to leave their familiar, quasi-safe home environment but because something alarms them, such as an investigator trying to grab them with heavy leather gloves through the partially opened cage door. If you give them a chance to settle down they will find their way back 'home' without much coaxing .... and you close the cage door while praising the relieved monkey. You will have to make sure that the escaped animal doesn't get her/his toes bitten while sitting on the mesh ceilings of cages, so you keep her/him moving over cages or allow her/him to sit on the floor. If you have a good relationship with the animals in your charge, capturing individuals who get loose should not be a problem at all (FIGURE 1). In my opinion, nets or leather gloves do not belong in primate rooms. When used, they not only cause extreme stress to ALL animals in the room, but nets can also cause physical harm." (Reinhardt)

Figure 1. A good relationship with the monkeys in her/his charge makes it relatively unproblematic for the attending care person to make an escaped animal return to the home cage.

"We've had a few of our rhesus girls escape. The scariest scenario was when one of them vanished in the ceiling. Without knowing if the firewall closed off the entire vivaria ceiling areas from the non-vivaria areas, I did panic a bit. She ended up coming back down on her own, but we were so alarmed that we quickly caught her with a net. We avoid chasing loose monkeys and let them roam for a bit hoping they'll go back on their own. Some of our other girls have returned to their home cage on their own. One girl we had was so friendly that I could just scoop her up and we'd `cuddle'! All in all we try to let them go back on their own . If they stubbornly refuse to cooperate we try to corner them so that their only reasonable option of escape from us is to go back into their cage. Only if that doesn't work do we net them and gently put them back in their cage." (Down)

"It's a long time since I worked with non-human primates, but I remember when individuals - baboons usually - escaped we only had to place fruit in their open home cage. This always worked . The animals returned readily, giving us time to close the cage without anyone getting hurt. We would stand as far from the cage as possible and toss the fruit into the empty cage, and then retreat so as not interfere with the animals' route 'home'. The baboons were as nervous as we were and kept at a respectful distance from us to avoid direct contact. We did have nets and a sedative dart gun but we never made use of them." (Barley)

"Many years ago, I had some experiences with escaped squirrel monkeys. If you `tried' to catch the monk, the animal would inevitably hop across cage tops onto the floor, back up on top of a cage, across the cage tops, onto the floor, etc., predictably moving in the same direction. No cages, barrels, or furniture were moved at all. The object was to keep the escapee going, in the same pattern with the #1 person quasi-trying to catch him or her with the `dreaded' leather gloves. I (#2 person) would don my gloves, memorize the route, stay out of the monkey's path, pick my spot, get my timing right, remain motionless, and only then ... make the catch. Being preoccupied with leaping and running around and being focused on #1, an escaped monkey doesn't seem to actually see me. I would make my catch at the base of the tail and gently swing the monk into the waiting hands of #1. It always worked, and I must confess, it was fun! Patience, attentive observation and accurate anticipation of the animals' reactions were the key." (Smith)

"The 'luring with food' tactic can be used even if the primates escape into the open outdoors as opposed to a room. Where I worked, we had over 40 rhesus monkeys get out of a corral because a big branch fell over the wall, creating the perfect ladder. We found the situation first thing in the morning, so no one knew how long they had been out. The first reaction of the caretaker crew was to grab nets and dart guns. My thought was: `Are you crazy? The monkeys will all disperse; they know what nets are for.' So, I convinced them to let me fill the corral with fruit and wait some time. And not very surprisingly, within only a few hours every one of the escapees voluntarily jumped back into the corral and got hold of a fruit. No one got distressed or injured. It was all so simple." (Conlee)

"When rats or mice get out of their cages we normally use a dustpan if the animals are scurrying on the floor, which they do most of the time. Most rodents, including guinea pigs, hamsters and gerbils will run along the perimeter of a typical animal room offering no central shelter area. If you place the pan across the run facing in the direction the critter is coming from, the escapee will run into it and happily sit there while you pick the pan up and safely and gently slide the animal back into its cage. This simple technique minimizes stress for the escaped rodent, eliminates the risk for the handler of

being bitten and it saves the elderly and arthritic amongst us having to get down on our hands and knees to awkwardly try to catch a swiftly moving, agile little animal. If rats or mice have escaped overnight we usually find them sitting in the food hopper of a neighbor's cage, finishing off the food they haven't managed to transport back to the home cage during the night. Sometimes their home cage gets so filled up with chow from neighbors that they can't get back into it. This scenario typically implies that the neighbors have bitten the tail and the feet of the scavenging escapee who, therefore, seemingly is relieved to be rescued by one of us. We rarely get anything other than rodents escape." (Barley)

"Jas's 'dustpan' idea is wonderful ... never thought of it. Alas, it is getting more difficult to bend down and remain motionless ahead of the direction an escaped rodent is traveling. Rodents, indeed hug the perimeter. If they turn around, a little commotion from that direction by someone else will get them going again in the opposite direction ... towards me. Typically they are focused on moving and seemingly are oblivious of my motionless figure hovering above, fingers poised to make the catch. They will come .... and cooperate ... you only need to be patient and believe in your perceived outcome! It always horrified me when the immediate reaction would be to move the racks, carts, food barrels, etc. while the rodents are scurrying around. Moving stuff only causes the escapees to run into an `unanticipated' direction, or to simply remain motionless ... to avoid detection, hence rendering any plan useless. I couldn't figure out why any of this would be necessary, not to mention, dangerous to the animals! Once the direction of travel is established, these items make it easier to poise behind or next to, waiting for the inevitable moment when tail and fingers meet. I aim for the base of the tail and I am determined to be successful the first time. I am more efficient using my forefinger and middle finger in a scissors like fashion, rather than using my forefinger and thumb ... may be, just me. If you miss ... plan again, anticipate, be patient, be still and be accurate! The trick is to keep the critters from learning a route that allows them to elude capture. Once they learn what's up, they become very savvy in testing your patience." (Smith)

"I once had a rat escape and get inside an old disused radiator on the wall. Funny how dumb I was about it. I spent ages trying to reach in, stick things through the ventilation holes to get the critter and cut holes at various points. An hour later it was getting dark, the rat and I were both grimy and annoyed and we were glaring at each other through the grill of the heater. Finally I stopped and thought 'what do rats like? Places that are familiar, dark and enclosed'. I put the rat's home cage near the hole it had entered the radiator, and turned off the light. Thirty seconds later the rat was captured and returned back home." (Patterson-Kane)

"I had a very similar experience with a hamster who not only escaped but disappeared. During the night the hamster simply gnawed a hole into the wall and dug his way under the floor of the room. You could hear him shoving material out of his way to build a burrow. But, he got hungry, and I counted on that. Next morning he came up, sniffed the air and headed straight for the carrot where I could catch him and put him back into his cage and give him the well-earned carrot." (Reinhardt)

"I sometimes use a cage with a hole cut in at one side and placed next to the wall to capture escaped mice. The mouse is gently guided from behind towards the hole. Once she has entered it's easy to pick up the cage and return the mouse to where she belongs. We are working on a project in which we film mice during the dark phase with infrared light. The technician working on the project is now analyzing the videos from several weeks ago. She told me yesterday that the cameras had caught three mice escaping from a cage [the lid hadn't been replaced properly], then getting back in several hours later! As far as we were concerned, the mice had never got out of the cage. We would not have known about this if it hadn't been for the camera. I wonder how many other mice go for midnight walks unnoticed!" (Sherwin)

"These are all great suggestions! But I do have a serious ethical question: What do you do with the escapees once they are captured? If you can determine where they belong, do you return them to their cage(s)? Do you sacrifice all escapees once caught? Of course, I am speaking mainly of rodents." (Anonymous)

"If it's obvious where they came from, that they are healthy and research is not compromised by their escapade, they are simply returned to their home cage. If they are 'normal' lines, i.e., not GA [genetically altered] and there is any doubt as to where they came from the rodents would probably be killed for `tissue harvesting'. Most of the GA animals are individually identified, so it's clear into which cage they should be returned to. I don't remember that any escaped rodent of this unit has ever managed to slip out of the room. If this were to happen, I am afraid we would have to euthanize the animal." (Barley)

"Working in small labs with intensive experiments, we could always identify individual rats by their natural markings and body weights, and , figuring out who was missing in a cage , return the escapees where they belong to." (Patterson-Kane)

"I work with relatively small numbers of mice, and many of these are individually marked by hair dye or hair bleach. This makes it easy for me to know where escapees have come from. I have always put them back in the cage and continued to use them in my behavioral studies - I wouldn't collect data from them on that day, but, depending on how long they have been out and what (might) have happened to them, I think the experience is rather unlikely to affect subsequently collected ethological data. If the mouse has escaped for a long period of time, it might be worth considering euthanasia. It is believed that mice (this might be inbreds only) cannot recognize each other after they have been separated for more than 24 hours, so replacing an escapee after this period of time would be like putting a stranger into a cage of resident mice... probably not a good situation." (Sherwin)

"Macaques who have been separated for some time and then re-united also have the tendency to treat each other as strangers. You could almost say that this is a 'blind' reaction. The partners don't 'take the time' to recognize each other but fight instantaneously. After witnessing such a scene, I have always circumvented aggressive escalations by simply giving the partners the opportunity to recognize each other during a brief moment of non-contact familiarization. Would that also work with mice, or are they really not capable of recognizing each other after a 24-hour period of separation?" (Reinhardt)

"Part of the problem with inbred mice is that they are so closely related to each other that they cannot distinguish between smells of other mice, or at least cannot distinguish between themselves and other mice. I would imagine that unless they are getting constant reminders about who is a 'friend', they would very rapidly forget this." (Sherwin)

"Birds are easy to recapture as turning off the light makes them immobile. However to my great embarrassment I did permanently lose one researcher's pigeon. There was construction work going on and the bird who perched on my arm got frightened and flew away, never to be seen again. I suppose that is one down side of using ex-racing pigeons - no hesitation to escape. I had a chicken called Roadrunner who was a terrible escape artist. She could open her cage by finding her way around various pegs and twist ties. Once free, she would lurk around under the cages and slip out when someone opened the door. She would then lurk around in the rafters until someone opened the outside door. I swear she had very definite escape plans, none of this wandering around in plain sight. She got out of the building on several occasions. Fortunately the building was in a rural area and she only ever got a short distance before being startled by a sheep and freezing, so we could grab her and bring her back home." (Patterson-Kane)

"In summary, it seems to me that capturing rodents, nonhuman primates and birds who have escaped from their primary enclosure does not need to be a chaotic event and does not necessitate the use of stress-inducing, possibly injurious methods in most cases. The application of basic ethological principles plus compassion can make a big difference, turning the re-capture procedure into a harmless event both for the escapee and for the personnel." (Reinhardt)

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