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PROTECTED-CONTACT ELEPHANT TRAINING

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Exhibiting elephants these days is a complex task. OSHA is taking a much more active role in mandating trainer safety issues. Animal activists, the press, and even legislators are attempting to dictate policy on elephant handling practices. The general public is exerting pressure to make methods more aesthetically pleasing. Elephants, it would seem, have entered the public domain.

All this controversy is calling into question centuries-old tradition of elephant care and management. Physical dominance and aversive methods, as necessary as they may be, are becoming less and less acceptable methods of training. Institutions are facing the dilemma of how to deal with a growing number of maturing bulls and aggressive cows residing in their facilities. Except for the crush, which most facilities do not have and which constitutes a major capital investment, there are no alternate handling methods currently available to utilize in these situations.

The San Diego Zoological Society requested Active Environments to design and conduct a pilot program to explore alternate methods of elephant handling at the San Diego Wild Animal Park in Escondido, CA. The requirements of the program were that it be safe for trainers, that it include no punishment of the elephants, and that necessary husbandry behaviors be trained and conducted without the use of restraint or anesthesia. A second objective of the project was to develop preliminary functional specifications for design of facilities to support this type of elephant handling program.

Active Environments subsequently developed what is now called a protected-contact handling system which relies solely on positive reinforcement operant conditioning. It is important to emphasize, however, that it is not the use of operant conditioning that distinguishes this system from other systems of elephant training. In fact, operant conditioning, intentionally or not, is a part of every training system, including the traditional free-contact methods for elephants. What makes this system unique and new, is the context in which operant conditioning is being applied. In this case, the context is that there is no free-contact between trainers and elephants, there is no use of punishment or negative reinforcement, and the elephant's participation is totally voluntary. The only discipline used is a "time out", which is simply a withdrawal of the trainer's attention from the elephant for a short period of time before resuming activity, or in extreme cases, actually ending a session and coming back later to try again. The animal is always fed it's daily allotment of food.

This program differs from the confined-contact system described by the AAZPA SSP Elephant Group in two ways. First, the animal is not restrained in any way. Contact is made through a barrier that has been modified to allow physical access to the elephant while protecting the trainers from injury. However, it can be used to desensitize an elephant to a crush and to work the animal once inside. Second, protected-contact is not a remote or "hands-off" system. There is a great deal of physical contact and interaction between elephant and trainer.

We feel this physical contact and interaction is critical to maintaining the psychological well-being of the elephants. It is unfortunate that, in most cases, when elephants are transferred from a free-contact system to a confined-contact system they lose all the good things that free-contact

work has to offer. An often overlooked fact is that free-contact provides a great deal of positive interaction between elephant and trainer and behavioral opportunity that contributes to an active, enhanced life for the animal. These positive elements must be maintained in the new system, in a safer form, or the result is a bored, neurotic animal. Trainers, too, benefit from the human-animal interaction, so it is important to provide trainers with continued, albeit safer contact with the animals.

This program was conducted in two phases. Initial work involved two bull elephants, an Asian named Ranchipur, and an African named Chico. The purpose of Phase I was to develop protected-contact techniques, test their feasibility as a handling methodology, and identify preliminary facility specifications. With that accomplished, Phase II was initiated to develop components of a functional operating system of elephant handling utilizing the protected-contact techniques. We will focus on Phase II in this paper.

METHODS

When applying the principles of operant conditioning to elephants, our basic training tools consist of a silent dog whistle, which serves as a conditioned reinforcer, and a bucket of sliced apples and carrots. Our plans to shape physical movement are drawn from our experience with marine mammals, particularly killer whales, who share huge body mass and remote positioning (they're in the water, we're on land) with our elephant subjects. So our third set of training tools is an assortment of targets - fiberglass poles from 3' to 15' long, with a foam float on one end.

The use of targets to shape behavior is a proven method in the marine mammal field. The principle of using targets is that, when presented, the animal orients toward and touches the target. We start with the head target to control gross movements of the animal within the enclosure. By presenting this target the animal can be drawn from any point in an enclosure to a specific location. Other targets are then used to control the movement or position of specific parts of the elephant's body, like lining animals up parallel to the working wall, and accessing feet, hips, shoulders, ears, tusks, and so on.

When elephants have had free-contact training with a hook, the use of targets presents some interesting complications. Initially, the action of a hook is used to physically manipulate the elephant's movement by escape-avoidance. In other words, the elephant is uncomfortable when the hook touches the back of a leg, so the elephant moves the leg forward to escape or avoid the hook. The physical movement is away from the hook. Once established, the animal will respond to the hook as a cue whether or not it is used in an aversive fashion. A target works the opposite. The target touches the front of the leg, and the leg moves toward it. Although it may sound like a small point, from the elephant's perspective, it is a very big difference. Elephants that have had any extreme measures used, like hot shots, are even more wary of any object coming toward them and are naturally inclined to try to avoid it.

This is where the process of desensitization is important. In very basic terms, desensitization is a process designed to train out, or overcome, fear. By pairing positives with any action or object that elicits fear, that fearful entity slowly becomes more positive, and thus less fearful. For all its apparent simplicity, desensitization is a critical component of a good training system, requiring expert skill and timing in its application to be successful. In the training of elephants, it is an ongoing process. In the course of our training we desensitized each animal, to varying degrees, to a myriad of objects and experiences including: targets, foot trimming tools, rubber tubs, needles, alcohol swabs, new openings in gates, different people, a microphone popping, working outside of normal routines, and so on. Often times, thorough desensitization must occur before you can even

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begin to shape a desired behavior. At times the animal's movement is completely ignored, and the process more closely resembles respondent conditioning rather than operant conditioning.

A necessary part of the training project was modification of existing facilities. The simplest approach was to modify existing gates between animal enclosures to allow protected-contact between trainers and elephants. Holes were cut in the African bull yard gate (Chico) to allow access to his feet, ears and eyes. These holes were fitted with doors that are kept locked except during training sessions. A bar was welded across the top of the gate to keep him from reaching over with his trunk. Later upper portions of the solid gate panels were replaced with expanded metal so he had better visual access. The Asian bull yard gate was modified in similar yet simpler fashion, with open areas for trainer access (See Figures 1 & 2) Fortunately, the San Diego Zoo and Wild Animal Park's welding crews are patient fellows, since they returned more than once to expand an existing hole or make a new one.

Although these modifications are functional, without any major redesign, our access to the animals has been limited. In most cases we only have direct access to them from one side. Consequently, we have learned to be creative in our manipulation of targets, and have benefited tremendously from the malleability and cooperation of the elephants.

The notable exception to that problem is an existing room in the Asian barn called the introduction chute. Its location, similar to a crush, is between the outside yard and the inside barn. However, two sides are solid, including the door to the outside and one side wall. The other two are open with vertical bars spaced 11 inches apart. On these open sides we added horizontal chain to prevent the animals from throwing their trunks. With complete access to the animal on two sides, it affords us a much improved training environment. However, ultimately access from 3 or 4 sides seems ideal.

A key feature of the protected-contact program is how the trainer is shielded from injury by the elephant. The physical barrier is only part of the protective strategy. The animal must be in a physical position where it cannot strike the trainer without repositioning itself. The trainer is in a position where he or she can easily move out of striking range while the animal repositions. This strategy is backed up by a buddy system in which trainers work in pairs where one focuses on the behavior to be conducted as the backup watches the animal. When working through an opening, the trainer never creates the opportunity for the animal to pin an arm by never extending the arm through a hole past mid-forearm or reaching around the corner of the opening. The arm is always in a position to be quickly withdrawn directly backward. When working on feet, the trainer positions in such a fashion that, if the animal kicks, its foot will impact the edge of the opening before the trainer's body.

The current program involves four elephants - the two bulls from Phase I work, Ranchipur and Chico, and two females, an African named Sabu and an Asian named Cookie. The bulls were obvious choices since they were already in remote handling situations and were not accessible for husbandry or veterinary procedures. The females were chosen because of some handling problems within the free-contact system; not because of aggression, but because of their flighty nature or lack of cooperation in certain procedures. The following is a brief profile of the subject animals provided by San Diego Wild Animal Park.

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Chico

African bull, age 26 years. Aggressive nature, considered very dangerous. Handled within a free-contact system while young but never trained on blood draw or foot trim. Not had free-contact with trainers for over 10 years.

Ranchipur

Asian bull, age 25 years. Fairly docile for a bull. Very suspicious and fearful of new things. Came from a circus where highly aversive measures, including hotshot, were used. Up until 4 years ago, trainers could do foot trims by using a female elephant as a shield. No work done since that time. Has very long tusks that require periodic anesthesia for trimming.

Cookie

Asian female, age 35 years. Functioning in free-contact system. Third ranking in the herd, she is rather flighty and is not consistent in cooperating with blood draw.

Sabu

African female, age 31 years. Functioning in free-contact system. Third ranking in the herd, she is flighty and is the only female that refuses to cooperate in routine blood draws. Very suspicious of any veterinary procedure.

Working with females currently being handled in a free-contact system raised some concerns. Could the animals discriminate between two systems which have different rules, criteria for performance, and consequences for misbehavior? Could they readily make the transition from one system to another? Most importantly, would there be any greater risk to free-contact personnel once the animals were exposed to a protected-contact system?

Trainer safety is a critical issue due to inherent differences between the two systems. In free-contact, trainer safety depends on total control requiring social dominance over the elephant. Any slip in performance by the animal, or failure to respond to a command, can be a challenge to that dominance. If so, trainer safety dictates a swift and consistent response. The trainer must make the elephant do it right, including using punishment if necessary. In a protected-contact system, participation is voluntary. There are no consequences for the animal if they do not respond, or if performance criteria is not met. Even overt aggression is either ignored or, at the most, responded to with a time out. That is possible because none of these situations can result in risk to the trainer.

Working with the females also gave us a chance to explore the potential benefits of working with animals who were currently functioning in a free-contact system. We could utilize control commands they heard everyday like back-up, steady, and come to help manipulate gross movement. We could also take behaviors they already knew, like foot trims and convert them to the new system instead of training the behavior from scratch. Most importantly, however, working with the females was an opportunity to explore what it would take, and how difficult it would be, to convert them to a protected-contact handling system, if that became desirable in the future.

Training sessions were conducted two to four days per week, with the bulls scheduled for three sessions per day and the cows two sessions per day. The training was conducted by the authors, and Society Animal Behavior Specialist Gary Priest. Society Elephant Supervisor Alan Roocroft participated in training in Phase II and he had worked with the authors in Phase I training as well.

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RESULTS

As of this writing, training has been conducted over a period of three and a half months. During that time, there were a total of 47 days of training, with the number of sessions each animal participated in as follows: Cookie 72, Sabu 78, Chico 105, and Ranchipur 110. During that time, all of the animals learned the basic control behaviors, and each was conditioned to voluntarily cooperate with the husbandry behaviors to varying degrees. Chico also learned some enrichment/demonstration behaviors. Table 1 shows a list of behavioral goals, and what each animal achieved. Several factors impacted the results.

First, identifying, installing and limiting the cost and complexity of facility modifications had a significant impact on results, directly effecting progress on certain behaviors, and in some cases dictating which behaviors could or could not be worked.

Second, there was difficulty maintaining a full training schedule. Initially work was scheduled four days a week. That quickly became three days a week, and for the last month of training, we averaged two to three days a week. There is no doubt that a five to seven day a week schedule of training would tremendously accelerate progress. It is important to note, however, that even with our limited schedule, retention by all the elephants was excellent, and progress continued unabated.

Third, animal health problems impacted training. Cookie, the Asian cow, was suffering from an eye infection at the beginning of the project, which seriously impaired sight in the left eye, and slightly impaired it in the right. We initiated training with her in the bull yard, where we were positioned above her, on the wall surrounding the yard. Progress was extremely slow and her level of responsiveness minimal. After about 4 weeks we considered using another animal even though her eyes were getting better. However, we opted to continue with her, but moved work to ground level in close enough proximity to touch and interact with her directly. Her responsiveness and progress accelerated dramatically. She was conditioned to come inside the introductory chute in just 6 sessions. She quickly equalled, and in some cases exceeded, the level of progress of the other animals. It appeared that the close proximity, and direct contact (in a protected context) was critical to her level of performance.

There were several beneficial results that are not reflected in the behavioral list. About half-way through Phase II training, Ranchipur the Asian bull, who was in full musth throughout most of the project, developed an abscess in his right front foot, and soreness and discomfort from an overgrown nail in his left front foot. There was serious concern about his condition, and consideration was being given to anesthetizing him to deal with the situation. Voluntary cooperation with foot trims had not yet been achieved, and his apparent discomfort made him less cooperative. However, with the veterinarian's and Alan's approval, we attempted to deal with the situation behaviorally. We washed his feet down regularly, applying the force of the water stream to the infected areas; attempted training him to soak his feet in a rubber tub; and continued work on foot trims. Over a period of approximately 4 weeks, we conditioned him to tolerate progressively longer bouts of trimming and washing of his feet. Through this approach, these problems were corrected and a risky procedure avoided.

Another noteworthy result was the change in Chico's behavior. In Phase I, we encountered a moderate level of aggressive behavior from this African bull. A touch of the target was often followed by an attempt to grab or eat it. Calling him to the target included an obligatory charge somewhere along the way. When really annoyed he would lunge his front feet up onto the wall where we were working, doing his impersonation of Godzilla. Because of the protected-contact positioning, none of this aggression was dangerous to us. Consequently, our response was to

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ignore it, and simultaneously reinforce any gentle or non-aggressive moves made toward the target or us. Throughout Phase I, his aggressive behavior almost completely disappeared.

In Phase II work, this low level of aggression has continued. In fact, it is almost exclusively limited to situations of difficulty or confusion. Most instances of aggression occur when working on his back feet. Because of facility limitations, to present his rear feet, Chico has to rotate 180 degrees to a head target, then back up, shift his back end to his left, look back over his shoulder, and extend whichever rear foot we requested (by a second target tapping it) behind him and through the hole. It is as complicated as it sounds. With some regularity he will register his protest by butting the gate with his head before going to the first target. However, he then proceeds to work with tremendous patience and tenacity, holding his foot calmly in the hole for scrubbing or trimming.

Overall, Chico, recognized as the most dangerous elephant in the collection, has been the star of the program. He seems to enjoy the sessions, often making rumbling sounds which the staff tell us are pleasure sounds. He has amazing endurance, working for over an hour on occasion. He also responds to the attention and tactile we can now safely offer him. He lines up against the gate and allows us to rub and scratch him, occasionally adjusting his position so eye contact is possible through the ear holes. Trainers in the area seem surprised and impressed at the change in his behavior. He is the most striking example of the enriching aspects of a protected-contact training program.

Our work with the females currently being handled in a free-contact system, did not seem to have negative consequences to the animals or handlers. The elephants moved from one system to the other, responding to the different commands without confusion or disruption of normal work patterns. Most importantly, there was no evidence of increased risk to the free-contact handlers working with these two cows. However, this is still an area of concern, and must be carefully evaluated in any attempt to introduce or integrate these two systems.

One final observation on all the animals, is an overall increase in tolerance for new stimuli. While desensitizing animals to specific stimuli, which is an integral part of this training, a general increased tolerance of the unusual seems to occur simultaneously. Some of that is very deliberate on the part of the trainer, some is simply a by-product of reinforcing animals for tolerating new events. Our observations indicate that overall the elephants react less fearfully to new stimuli, and if they do, are quicker to recover and continue working.

CONCLUSIONS

A great many capabilities remain to be demonstrated before protected-contact is ready to be implemented as an operational system for handling elephants. However, this project has proven successful on several levels. In Phase I we demonstrated that protected-contact methods could be used to train desired behavior while meeting increased requirements for trainer safety. We also identified initial facility modifications needed to implement the program. Phase II demonstrated that a protected-contact program can be applied to a variety of situations and animals, and that protected-contact has the potential for development into an operational system.

Several clear benefits of a protected-contact system have emerged. Protected-contact handling methods provide an enriched behavioral environment because behavior is volunteered not demanded. Opportunities are created for positive trainer-animal interactions in a safe context while avoiding situations that are likely to induce aggression. By eliminating punishment and utilizing positive reinforcement exclusively, protected-contact addresses animal rights issues and public relations concerns, and demonstrates an obvious commitment to the welfare of the animals. Protected-contact also provides increased opportunities to reinforce cooperative or tolerant

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behavior to enhance socialization of individuals into groups. Finally, a variety of innovative presentations and demonstrations can be developed using protected-contact techniques.

It appears to us that protected-contact is a system that addresses many of the tough issues facing facilities and managers exhibiting elephants today. At the very least this preliminary work indicates that the protected-contact system of elephant handling is worthy of a closer look.

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