

## wild caught and naïve herd of African Elephants (*Loxodonta africana*) at the San Diego Wild Animal Park

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In August of 2003 the San Diego Zoo's Wild Animal Park (WAP), under the auspices of the AZA's Elephant SSP and a USFWS permit, imported 1.6 African elephants, *Loxodonta africana*, from The Kingdom of Swaziland. At the time of their arrival all animals were estimated to be approximately 13 years old. During capture, transrectal ultrasound examinations revealed one cow was approximately 10 months pregnant. In February of 2004 she successfully gave birth to a healthy male calf that just recently turned two years of age. This elephant herd is the first ever in captivity to be trained in a protected contact (PC) program without any prior free contact (FC) training. Furthermore the term PC now often refers to only a physical separation between the animals and humans and not to how the animals are managed and trained. This paper is an update that highlights the benefits and successes of a management and training program that is not only PC but is based on managing the animals as an outdoor herd and behavior conditioning void of all dominance and based solely on trust and positive reinforcement.

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**Short Title:** Elephant training at the San Diego Wild Animal Park.

**Key Words:** Positive reinforcement, African elephant, naïve, Least Reinforcing Stimulus (LRS),

### INTRODUCTION

Elephants have been managed and trained for human purposes for approximately 4000 years (Sukumar, 2003). The techniques developed in India and Southeast Asia for breaking and training elephants seem to have eventually come to American zoos largely unchanged via European zoos and circuses. This system of elephant management is patterned after observations of wild elephants' hierarchical social behavior and exercises social dominance through occasional physical punishment (Priest, 1992). Today, approximately 15 years of after its introduction, around 50% of zoos practice some form of protected contact (Galindo, pers. comm.). Techniques have improved in both FC and PC. However there is still a disconnect between practitioners of both methods with frequent disagreements on which is the better system. Organizations such as the AZA and EMA are trying to overcome this struggle (often seen as an internal one being that we're all elephant managers and must stand united so as not to give our detractors supporting arguments against the holding of elephants in zoos) by promoting the similarities between the two systems and downplaying the differences. This position is very understandable because unity is very important across disciplines. However, this does not have to apply to the specific techniques used to actually train the elephants. We welcome the differences and want to promote our use of positive reinforcement in training and elimination of any form of dominance, as well as how we manage our elephants outside of training practices, as a preferred way to manage elephants in PC. We are not alone in our assessment that there is and should be innate differences in the best practices of PC and free contact. The suggestion

between training systems, only a continuum of options, managers (Laule and Whittaker, 2005). The uses of some are not appropriate in a PC environment. These may include the use of dominance, coercion, positive punishment and negative reinforcement. Our philosophy is one of working with them as equals where developing trust is paramount.

Prior to the importation of these elephants we were told by elephant experts, keepers and even some behaviorists that the only reason PC had any success with elephants was due to the fact that the elephants had a FC background where compliance was taught. Furthermore, we were told that we would fail in the training and management of this herd because the animals would have no behavioral compliance due to this lack of a FC history. This is the first time ever where a complete herd of elephants with no free contact background has been trained in PC. We feel that the lack of this background is actually one reason why we have been so successful in training them. We were free to employ one consistently applied training program and one that was void of a history of many practices that may hamper progress where willful cooperation is essential.

## METHODS

### Study site and subjects

The San Diego Zoo's Wild Animal Park (Escondido, CA) under the auspices of the American Zoo and Aquarium Association's African Elephant Species Survival Program and a United States Fish and Wildlife Service permit, imported 7 (1.6) African elephants from the Kingdom of Swaziland. The animals were scheduled for culling due to overpopulation, habitat destruction and their threat to critically endangered species such as black rhino, *Diceros bicornis minor*, in the reserves. A calf (1.0) was born during the winter of 2004 increasing the herd to 8 (2.6) animals. Another calf (0.1) was born during the summer of 2006 increasing the herd to 9 (2.7) animals. Elephants are housed in a ~1.3 hectares outdoor enclosure containing trees, rocks, shade structures, grass, dirt, watering areas, and transfer structure with a restraint device and scale, and two indoor areas containing multiple stalls.

### Management / Enrichment of the elephants

We decided that the most important aspect of our management system was to let the elephants behave like elephants as much as possible. This meant that, outside of when training them, we would keep them all together most of the 24 hour day and allow them the opportunity to socialize, forage, play, swim, sleep, establish their hierarchy, conceive, birth and raise their young, etc., as a herd with access to as much outside room and shelter as possible. We also realize that we are fortunate to have our San Diego weather that allows us to provide this opportunity year round. Both barns are heated and animals have access to them when it's cold or raining. Most of the year the animals are outside 22 hours or more per day. We minimize the amount of time any animal is in a stall(s) or barn and when they are we usually provide them an enrichment device or food item to keep them active.

Their entire diet is managed as well. Working with our nutritionist, the elephant's obligatory diet consists of three types of hay, beet pulp, an alfalfa-based pellet and a variety of browse. This variety of food items allows us to set their food or reinforce the animals in any way we choose. In fact, we spend a lot of time and take pride in how we set the yard (twice a day on average) to encourage foraging, climbing, tusking, stretching, digging, problem solving, etc. by using the different food items in conjunction with other enrichment devices, objects in the yard (rocks, boulders, tree stumps, logs, pools, wallows, etc.) and large piles of dirt. We feed them smaller amounts of food several times a day instead of employing a meal strategy. The animals receive no produce, breads or sweet feeds. Additionally, the animals receive no extras in their diet for training. We measure out their pellet in the morning and use this for their training and enrichment. We monitor their intake when feeding as a herd, weigh the calves every day and the others once



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their proper nutrition. Another important goal of the way we active and in shape and work in conjunction with their diet right and to wear down the pads and nails of their feet naturally. We feel their nearly constant access to the large yards and its different substrates and topography, along with our enrichment program, is key to maintaining their health and well-being.

## Training of the elephants

The backbone of our elephant program is the choices we made on how they were to be trained. The fact that our elephants were naïve, not subject to any prior form of training, gave us an ideal situation to prove what we already knew from previous experiences within the vast field of animal training. Mainly, that a training program based on the consistent use positive reinforcement would be highly successful, even with elephants. We did not attempt to establish dominance over them. We do not use positive punishment or negative reinforcement, including the aversive and pre-aversive objects or training associated with that form of conditioning. We did not teach nor use a stimulus delta %no+ or the elephant release %alright+ We purposely avoid daily routines such as time, place or behavior. We agree with and try to promote the following statement regarding the current status of PC, %the trainer often still carries the ankus, may use an authoritative voice to give commands, and doesn't actively attempt to abolish the pre-existing dominance-based relationship. Although some may consider this PC, we respectfully and adamantly, disagree. PC is not free contact conducted from the other side of a barrier+(Laule, et al. 2005).

What we do is establish relationships based on trust and positive reinforcement. Conditioning behavior is usually accomplished by shaping behavior through successive approximations, usually with the aid of targeting. A dog whistle is used as a terminal bridge. Intermediate feedback is in the form of verbal praise. Reinforcement almost always occurs only after the bridge, this includes not giving the animal some hay or grain to feed on during training sessions to keep them occupied or interested. We use an LRS (Least Reinforcing Stimulus) as a consequence for incorrect behavior or an incorrect bridge. The only form of negative punishment used is the infrequent use of a time-out. We strive to be able to train any behavior at anytime and any place.

## RESULTS AND DISCUSSION

We feel that the way in which we manage and enrich our elephants' lives has encouraged them to display their natural behaviors and promote a healthy environment for them to function as a herd. Our bull has bred all the females (except the mother of the first calf) and we currently have three confirmed pregnancies.

Both calves born into this herd in San Diego were born outside in the presence of other elephants; one is now two and a half years old and the other is two and a half weeks old. Both are thriving under the care of the entire herd.

None one of the elephants have chronic foot issues or abscesses. Stereotypic behavior such as rocking or swaying has been avoided. We feel that both these common problems have been avoided to date because our elephants are given access to the outdoors for 22 hours or more per day year round and are kept together as a herd the majority of the time. They are also encouraged to remain active and we purposely minimize the amount of time that they are in confined spaces, especially if it requires standing on cement.

We strongly feel our training through the use of positive reinforcement and the avoidance of all dominance-based methods have been the key factors in the success of our elephant program. We develop relationships between each animal and trainer that is based on trust. Because we use a terminal bridge the whistle is not sounded very often, relative to an intermediate bridge, and

for it. Through this we can pinpoint specific micro-behavior animals strive to interact with us and appear to really enjoy. Where undesired behavior is performed, we simply LRS and move on. Rarely is there a need to end an interaction on a negative note with a time out. However, when this occurs the time out lasts an extended period of time, typically hours in duration. They have probably learned that if we have to leave we are probably going to be gone for quite a while. We feel that the rarity of a need to prematurely end a session is due to the animals' desire for our attention and the length of our time outs.

In three years we have trained more than 200 completed behaviors on our African elephants (FIGURE 1). Husbandry behaviors such as trunk washes and blood sampling from their ears name only a few. Our current semen collection training work with the bull is progressing rapidly and we are collecting from him often. We've just recently trained our first calf, Vusi, to perform sternal and lateral lie down behaviors. These lie down behaviors, to the best of our knowledge, are the first lie-downs to be trained on an elephant exclusively in a PC environment, again solely through the use of positive reinforcement and shaping.

## **CONCLUSION**

1. The animals are successfully learning behaviors through the near-exclusive use of positive reinforcement in a dominance-free training system founded on developing trust.
2. Compared to some other elephants in PC where traditional methods have been maintained, our elimination of the use of any form of physical, emotional or social dominance or threat has only enhanced the behavioral reliability of the animals.
3. We feel that how we manage and enrich our elephants' lives leads directly to their overall physical and behavioral health and well being, including the successful birthing and rearing of our calves and the current pregnancies at the San Diego Wild Animal Park.

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Elephant Departments  
WAP African Elephant Barn

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Trained Behavior List for African elephant (Loxodonta africana)	Swazi ACC# 603380	Umngani ACC# 603379	Umoya ACC# 603378	Ndlamitsi ACC# 603375	Lungile ACC# 603376	Litsemba ACC# 603377	Mabhulane ACC# 603381	Vusø Musi ACC# 604027	New Calf ACC#
<b>BRIDGE CONDITIONED</b>	X	X	X	X	X	X	X	X	
<b>TARGET TRAINED</b>	X	X	X	X	X	X	X	X	
<b>TRUNK PRESENTATION</b>	X	X	X	X	X	X	X	X	
<b>COME</b>	X	X	X	X	X	X	X	X	
<b>A-B CONTROL TRANSFER</b>	X	X	X	X	X	X	X	X	
<b>LEAN-IN</b>	X	X	X	X	X	X	X	X	
<b>HOLD PRESENT POSITION (steady)</b>					¾				
<b>MOVE FORWARD</b>	¼	½	¼	¼	¼	¼	¼	¼	
<b>BACK UP</b>	½	¾	¾	¾	X	½	¾	X	
<b>COME IN LINE</b>			X		X	¾	½	X	
<b>TURN 180 DEGREES FROM TRAINER</b>	X	X	X	X	X	X	X	X	
<b>ERD TRAINED</b>	X	X	X	X	X	X	X	X	
<b>SCALE WEIGHTS</b>	X	X	X	X	X	X	X	X	
<b>WASH DOWN</b>	X	X	X	X	X	X	X	X	
<b>RELAX TRUNK (target on ground)</b>	X	X	½	X	X	X	X	X	
<b>TRUNK WASH</b>	X	X	X	X	X	X	X	X	
<b>TRUNK OVER HEAD</b>	X	X	X	X	X	X	X	X	
<b>ORAL EXAM</b>	X	X	X	½	X		X	X	
<b>EYE EXAM/ WITH PEN LIGHT</b>	¾	¾	¾	¾	¾	¾	¾	¾	
<b>DROPS IN EYE</b>		X					X		



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African elephant (Loxodonta africana)	Swazi C# 603380	Umgani ACC# 603379	Umoya ACC# 603378	Ndulamitisi ACC# 603375	Lungile ACC# 603376	Litsemba ACC# 603377	Mabhulane ACC# 603381	Vusø Musi ACC# 604027	New Calf ACC#
<b>GIVE OBJECT TO KEEPER</b>	X	X			X		X	X	
<b>RETRIEVEAL</b>	X	X		½	X		X	¾	
<b>UP THE WALL</b>	X	X		¼			X	X	
<b>TRUMPET VOCAL</b>					¼				
<b>GROWL VOCAL</b>									
<b>SALUTE</b>					½				
<b>BRACE</b>					X				
<b>BOW DOWN</b>								X	

LEGEND		
¼ = TRAINING STARTED	¾ = ALMOST TRAINED	L = LEFT SIDE TRAINED
½ = MIDWAY POINT	X = COMPLETED	R = RIGHT SIDE TRAINED