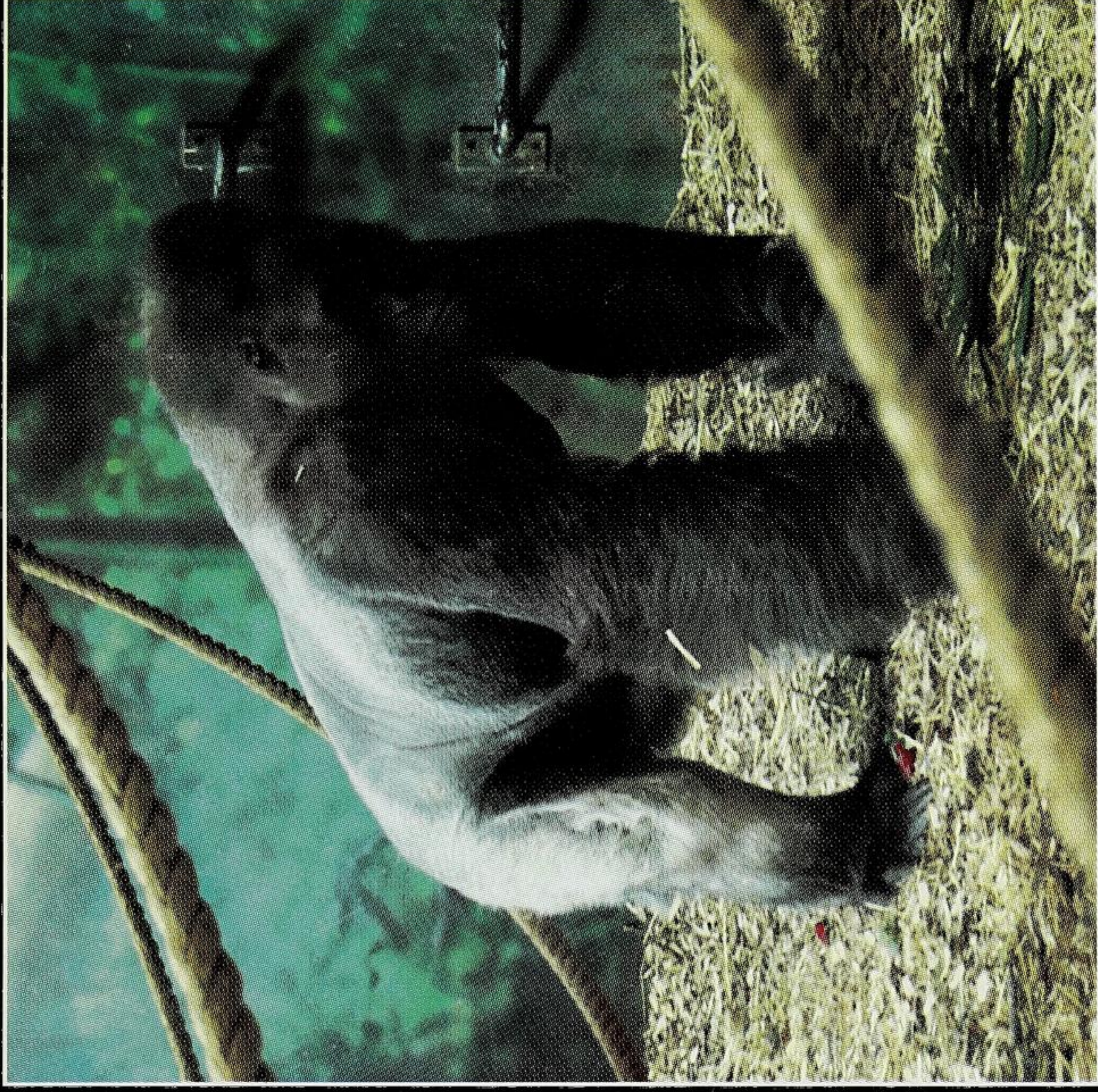


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Never Too Late

By Jonnie Capiro, Keeper

The Maryland Zoo, Baltimore, MD

I met Daisy Mae, a wild-caught Southern white rhinoceros (*Ceratotherium simum simum*) when I began working as a keeper at The Maryland Zoo in Baltimore in 2006. She had a reputation. She was approximately 39 years old, had lived at the zoo for 15 years, and showed little interest in training. I saw this as an invitation to get to know her and find out what motivated her. Two and a half years later, she is one of the most impressive animals I have ever worked with. She demonstrated unbelievable voluntary behaviors that led to a better understanding of her husbandry needs, and she taught me valuable lessons of the importance of time commitment and patience, especially when working with an older animal.

Instantly, she was an interesting case study to me. Very little recorded information existed about her past. Records indicated that she relocated from Kwazulu Natal, South Africa in 1968 and resided at four institutions before settling in at The Maryland Zoo. She lived in both group and solitary arrangements, and there is no written record of a formal training program prior to her arrival at the zoo. Had she ever had blood collected? Had she ever had offspring? Most likely not, but records were unclear.

I found her to be an enigma. I wanted to understand what she was interested in and how to motivate her to participate in routine visits with the veterinarians. I had so many questions, and it was apparent I would have to jump right in to find answers that could help provide the appropriate care for her advanced age.

Using Motivators to Shape Behaviors

Previous keepers developed basic training criteria to establish behaviors that would aid in her husbandry. However, due to her slow movements and inconsistency with training performance, there was no established formal training program in use when I arrived. The barn is not equipped with a restraint device, so all husbandry and medical work requires voluntary participation from the rhinos. Husbandry care consisted of routine visual examinations and hands-on work for skin and horn care. Daisy appeared to be in good health, but at her age, it was important to continue a positive working relationship between her and the veterinarians.

I began by establishing a basic goal for her: to stand in position for visual and tactile exams. A target pole would fulfill that requirement. Daisy was slow to approach the target and sometimes it took a few minutes. I unequivocally accepted her nature, however, I immediately realized the commitment to this project would be time consuming. This was not going to be a typical training program, and I designed everything to be adaptable and most importantly opportunistic.

First, I had to find a motivator. After spending many mornings just sitting with her, I soon found out that she simply wanted attention. I began feeding her alfalfa cubes, which she never really ate before, and brushing her. She seemed to look forward to this interaction every morning, greeting me instantly when I appeared at her pen.

Next, I moved on to incorporating basic behaviors, such as touching a target, holding position on cue, and lifting her head up. I used tactile reinforcement and tried to introduce food as a reward. She advanced through these behaviors in about six months and ate alfalfa cubes consistently, which became the primary reinforcement.

Current Health Status

Veterinarians remarked at the change in her behavior, especially her willingness to allow visits for visual examinations. They inquired about what else we could accomplish based on this foundation. They decided it would be important to weigh her and collect blood, so I began a long desensitization process for these behaviors. Using a target, I eventually led her onto a scale, which took 30-45 minutes on some days. I used the steady, or hold position command to collect blood from her cephalic vein.



Daisy Mae, White Rhinoceros at The Maryland Zoo in Baltimore
(Photo by Daniel Capiro)

Collecting blood was a huge milestone for her. It was the first time veterinarians had the opportunity to evaluate this aspect of her health. We were also able to opportunistically collect urine samples on the same day of blood collection for further evaluation of her kidney function. The analysis indicated a very healthy older rhinoceros! We were ecstatic over her accomplishments and could not wait to learn more about her.

Other husbandry goals identified along the way, such as toenail filing and skin treatments required brainstorming, creativity, and experimentation. For instance, the zoo's much younger male rhino, Stubby, was trained to put his foot on a foot box, about a six-inch step up off the ground, for toenail filing. Daisy would not lift her foot more than a few inches so, instead of using the same criteria, I slid a half-inch piece of plywood under her foot when she lifted it. This half-inch lift was enough room to file her nails.

Working with a challenging animal required frequent modification of our expectations to deliver the optimum results. It was also important to consider her limitations when developing new behaviors and not become frustrated with inconsistent or failed results. If one method proved unsuccessful, then it was time to proceed with another creative idea.

Opportunity in Advanced Husbandry

In addition to routine husbandry care for this rhinoceros, including toenail filing, horn filing, and skin treatments, age became a cause of greater health concern. The veterinarians were interested in her reproductive health. In August 2007, animal managers, keepers, and veterinarians met to discuss options for performing a reproductive examination to better understand Daisy's overall health. While previously this goal may have seemed unattainable, Daisy accomplished so much already, I had confidence that she would continue to surprise us. I began training her to turn around and present her hind end for internal examinations. After approximately eight months, spending many hours a week on this process, both veterinarians performed exams and were ready to prepare her for ultrasonography. The more involved Daisy became with training, the less she reminded us of a geriatric animal. However, there are observable physical indications of her age.

The cold Baltimore winters require the rhinoceros to remain in the barn for extended periods of time. As a result, Daisy develops mild pressure sores on her joints from increased time spent indoors. The sores were mostly moist, soft skin that was sensitive to the touch on her knees and outer toe areas. They seemed to improve during the summer, when she had daily access to the exhibit and mud wallow, but in the winter, they became more noticeable. In January 2007, the zoo installed a special floor to one of the rhino holding pens to relieve the pressure on her joints when lying down. Specialty Coating Solutions, LLC installed a spray-on polymer material to coat the concrete floor. Daisy seemed to prefer the new floor; when given the choice of substrates, she chose to rest on the coated floor. The floor seemed to help relieve joint pressure and alleviate the sores while we continued to search for a topical solution.

Once again, using patience and understanding of her behaviors, the keeper team treated the pressure sores with a well-organized approach. In December 2008, the veterinarians developed a plan to treat each of four sores with a different topical medicine and observe the results. The plan was simply an informal trial, given the many uncontrollable variables. The goal was to anecdotally observe changes or differences among the variety of treatments. The four treatment sites were: left lateral stifle, right lateral stifle, left lateral surface of the fourth digit, and right lateral surface of the fourth digit, just above the toenail. The respective treatment options were: mud (a clay/sand mixture); a paste made of an antibiotic/steroid/solvent combination (Neo-Predef[®], Pfizer Animal Health, mixed with DMSO); an antibiotic/steroid spray (Gentocin[®] spray, Schering-Plough Animal Health); and silver sulfadiazine cream (Thermazene, Kendall Company). The plan required collaboration between keeper and veterinary staff and about 20 minutes to treat these areas daily.

We cleaned the sores with a chlorhexidine scrub and dried them, except for the mud treatment site, which was not cleaned at all. Then, we applied the treatments. We cleaned the sores weekly, and photographed them to document any changes. After approximately two weeks of this trial, veterinarians eliminated silver sulfadiazine cream and Neo-Predef[®] due to lack of any improvement in the sores. We continued the treatment using mud on two sores (left stifle and right digit) and Gentocin[®] on two sores (right stifle and left digit). After two more weeks, both methods seemed to show slight improvement. In general, the sores appeared drier, firmer, less irritated, and less sensitive than before the trial. As a group, we determined that mud was the most effective treatment. We decided to continue the mud treatment daily and follow up with photo documentation throughout the winter.

Daisy provided many opportunities to learn how to better care for both of the zoo's rhinoceros. What a nice surprise to have such an old animal teach us some new tricks! I feel fortunate that I share a trusting relationship with her and am an integral part of her overall care. It is a wonderful opportunity to grow so close to an animal that is becoming a rarity in the wild. I look forward to continuing to work with her on additional potential accomplishments and spending many more healthy years with Daisy Mae.

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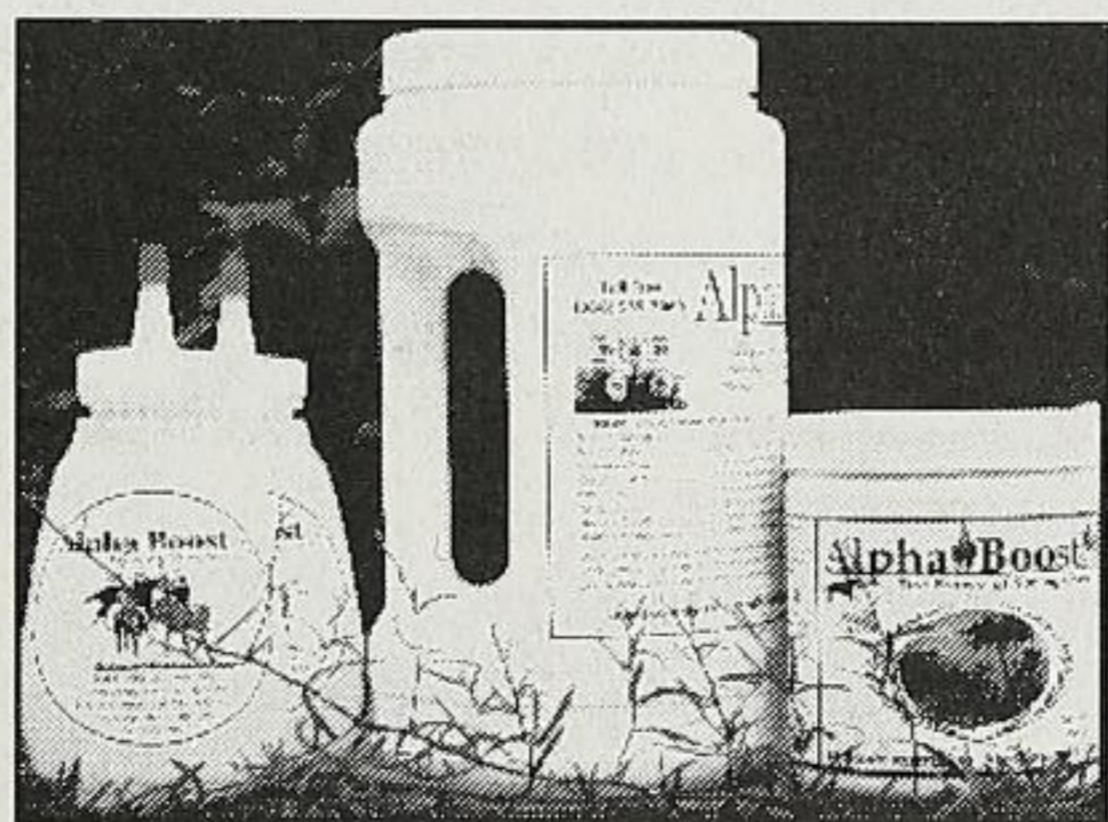
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