Black Rhino Reboot

by Jane Speech

An angel gets wings; a black rhino gets boots. Coco, a 25-year-old southern black rhinoceros, Diceros b. bicornis, at Fossil Rim Wildlife Center in Texas, is the poster child for innovative footwear on big heavy animals. It's not easy to keep wrappings on a rhino foot long enough for adequate healing of a lesion, but those concerned with rhino care never stop trying. The latest boots developed by Diceros Boots LLC are pointing in the right direction.

When Coco was six years old, her right foot gave her trouble, perhaps owing to a foreign object that opened up a hole in the foot pad. According to Dr. Holly Haefele, director of animal health at Fossil Rim, "We put a boot on for about a month and got good resolution to the problem for about five years." Then the lesion redeveloped and treatment resumed, but this time the staff had trouble keeping boots on Coco. Adam Eyres, hoofstock curator, estimated they tried more than 20 different boots, made of various materials, but none worked well. Meanwhile, Coco's left foot developed a lesion, most likely a result of her bearing her weight on her left foot while favoring the right one.

Radiograph of the left front foot. Fossil Rim Wildlife Center

Enter Christine Bobko, president of Diceros Boots LLC and rhino keeper at the Denzer Zoo. She brought cutting-edge technology to the rhino boot market, starting in her own back yard with a black rhino suffering the same kind of foot problems that Coco had. At a workshop for the International Rhino Keeper Association, Bobko described the boot-making process she and her husband, engineer Brian Teasdale, were developing. Their elastomer boots are super soft, with a urethane sole and an upper made of silicone and Gore-Tex. With each iteration that is rhino tested (and ultimately destroyed), the design incorporates better methods of joining the sole to the upper and now includes a front zipper to accomplish a snugger fit.

The boots themselves are one thing. Getting a mold for a custom fit is another. The latter requires immobilization of the animal, no simple feat when dealing with rhinos, whose weight puts pressure on their organs and muscles. "You worry about how long they are down," said Eyres. With input from artist Landon Meier of Hyperflesh, Bobko and Teasdale developed a system for quick-casting a silicone mold.

Justin Smith, senior animal care specialist at Fossil Rim, heard Bobko's presentation, talked to her about Coco's problem and put her in contact with Eyres. Since then, Coco has been the centerpiece of an ongoing well-choreographed and

Front left foot undergoes wound debridement and cleaning before applying the new boot. Fossil Rim Wildlife Center

Making the mold for the boot. Wrapping molding strips coated in silicone around the rhino's foot. Fossil Rim Wildlife Center

Painting silicone onto the molding strips. Fossil Rim Wildlife Center

Removing the silicone mold. The zipper on the boot will be applied where the split is made in the mold. Fossil Rim Wildlife Center

ultimately upbeat saga of foot care. Just as with raising a child, it takes a village to boot a rhino. This involved multiple immobilizations, with carefully coordinated teams administering antibiotics, fluids and sedatives; drawing blood; taking and interpreting X-rays; cleaning Coco's feet and applying medication; making the molds and then creating the boots; and finally fitting them on the rhino's feet. Twenty-two people attended Coco's first immobilization, including Bobko and Teasdale, and staff from Fossil Rim and Abilene Zoo. Dr. Lisa Stephens, an equine vet from Weatherford, helped with taking X-rays and lending her considerable experience as needed. Because Fossil Rim is a teaching facility, a number of observers stood by. At a subsequent immobilization, Fossil Rim asked Dr. Dustin Dorris, an equine vet from Stephenville, to help with an aggressive cleaning of Coco's feet before the boots were slipped on over the bandages.

Coco destroyed her first pair of boots within a week, but the second pair did better. One boot lasted eleven days; the other fourteen days. This was a great improvement. The success made the team feel better, and it also made Coco feel better. When the first pair was put on, Coco's mood improved noticeably, and she trotted up to the fence to present her foot for inspection. This was something she was trained for but often unwilling to do, especially for long enough to accomplish health care tasks. With her second pair of boots, Coco's behavior improved even more, and the wounds are healing. The team holds out great hope that Coco's foot problems will be resolved and that the development of elastomer boots can help other animals as well. The saga continues.

Just before being brought out of sedation, Coco is shown with her new boots on. Fossil Rim Wildlife Center

Coco, southern black rhinoceros, trotting in her boots. Fossil Rim Wildlife Center