

Building a Science-based Behavioral Husbandry Program

(Introduction to the Science of Behavioral Husbandry Series)

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The Disney's Animal Kingdom Behavioral Husbandry program began almost 20 years ago and has grown and developed in many ways since that time. When the program first began, our staff development focus was on understanding the benefits of training and enrichment, and on making behavioral husbandry an integral part of animal care. Two decades later, the animal care industry has progressed tremendously and behavioral husbandry has become an area of focus at many zoos and aquariums. Our seasoned animal care staff have embraced our program philosophy of the integration of behavioral husbandry into animal care, and even new staff typically arrive with an appreciation of the benefits of training and enrichment. Our focus has shifted from *why* training and enrichment are important to *how* they should be implemented.

As the growth of the program continues, our aim is to build an environment of sustained progress and learning so that we are always applying the best available techniques to enhance the welfare of the animals in our care. To that end, a few years ago we began a close partnership between scientists and behavioral husbandry managers with the goal of integrating scientific best practices into our training and enrichment programs. Through this partnership we have embarked on a journey that has led us to re-imagine every aspect of our behavioral husbandry program, from philosophy to staff training to the details of planning, implementing, and evaluating training and enrichment. We are still on that journey, and the Science of Behavioral Husbandry series is our effort to share what we are learning, and how we are putting it into practice, with the animal care community. In this introduction, we tell

the story of how we started down this path, share some of the things we have learned, and detail some of the resulting changes we have made.

How did we get here?

Over the past few decades, zoos and aquariums have become increasingly invested in the use of animal training and enrichment techniques to facilitate husbandry and medical care. These techniques stem from the science of operant learning, also called behavior analysis. This is the area of science that studies the relationship between the environment (sights, sounds, smells, etc.) and an individual's behavior. Using what we know about the relationship between the environment and an individual's behavior to change behavior that is significant for that individual is called applied behavior analysis. Keller Breland, Marian Breland Bailey, and Bob Bailey, early pioneers in the animal training industry, studied operant learning with the father of behavior analysis, B.F. Skinner, and then applied what they learned in the training of over 150 different species of animals. These early pioneers had great success with their company, Animal Behavior Enterprises, and were influential in the adoption of animal training techniques by zoos and aquariums. Over the ensuing years, animal training in these settings has lost some of its connections to the original scientific foundation. Some training techniques have developed and evolved in the absence of scientific evidence. Technical terms have been used inconsistently and sometimes replaced by jargon.

Restoring these connections is important

to the future of behavioral husbandry. Behavior analysis has been successfully applied in many other areas, including education, workplace safety, and business management. In these areas, practitioners (those who apply science to change behavior) use recent research findings to develop new ways of changing behavior, and measure the success of those efforts using methods specifically designed for individual behavior. This process is called evidence-based practice. Scientists with expertise in operant behavior can offer practical recommendations based on current findings, which are built on a foundation of over 80 years of research. To continue making new discoveries, scientists need to understand the challenges that arise when managing behavior in practical settings. In order for this collaborative process to be effective, scientists and practitioners need to be connected to each other in ways that facilitate frequent and fruitful exchanges.

Science is ever-changing. The scientific literature, consisting of peer-reviewed journal articles and books, builds upon itself over time as new discoveries and advances are made, questions are answered, and new questions arise. We hope to foster state-of-the-art behavioral husbandry practices by maintaining a close connection with advances in behavioral science. We are doing this by integrating science-based practices into our program at all levels, including training, enrichment, behavioral assessment, and animal care problem-solving. We have a behavior analyst on our team who brings a background in basic (laboratory) and applied (practical) operant learning, expertise in translating scientific principles of behavior to practical



Taveta Golden Weaver Nest

applications, and ongoing contact with advances in the field of behavior analysis. The behavioral husbandry professionals on our team bring a background in hands-on animal training and enrichment with a variety of species, expertise in coaching and collaborating with animal care staff, and ongoing contact with advances in the field of animal care. Having a behavior analyst on our team allows us to blend this area of expertise with the strengths of our behavioral husbandry professionals.

What have we learned?

We have learned that the science of operant learning, also called behavior analysis, has a lot to offer us. This area of science is focused on understanding and influencing the behavior of individuals. This is a perfect match with behavioral husbandry because our focus is on the welfare of individual animals.

We have learned that the words we use when we talk about training and enrichment are important.

Because professionals in our industry sometimes use behavioral terms in different ways, our communications with each other are not always as clear as they could be. To get the best outcomes in our programs, we need to be able to clearly understand each other. As a starting point, we collaborated with Ken Ramirez and members of AZA and AAZK to update the AZA/AAZK training

Hippo Training to Open Mouth



Cairo Spiny Mouse Training

terms list. The updated version is on the AAZK website at <https://www.aazk.org/wp-content/uploads/AZA-AAZK-Training-Terms-2016.pdf>.

We have learned that we have some work to do in strengthening our understanding of behavior principles.

Some of the techniques commonly used and talked about in our industry have drifted away from their scientific foundations and are often used in inconsistent ways. We have begun a process of looking closely at the techniques that we commonly use and the issues we commonly face, going back to their scientific foundations and re-examining our practices. This allows us to build our capacity for carefully selecting the right tools for each situation, and using those tools consistently.

What have we changed?

We have recently updated our program to reflect our focus on science-based behavioral husbandry. Here are some of the elements that define our new program direction. You can find this and other information at www.animaltraining.org and www.animalenrichment.org.

Behavioral Husbandry Definition: Behavioral husbandry is the component of daily animal care focused on how animals interact with their physical and social environment. Goals of behavioral husbandry include

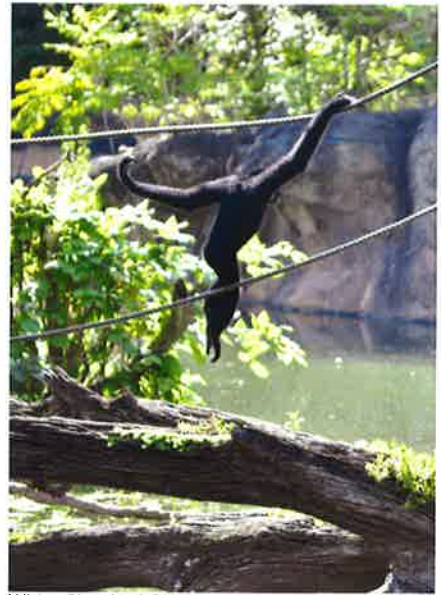
voluntary participation in their care and opportunities to express species-typical behaviors. We cultivate these goals through an understanding of natural and individual history and an application of behavioral science. We continually evaluate the success of our efforts by measuring behavior change.

Behavioral Husbandry Philosophy: The cornerstone of our program is its philosophy. We are committed to providing the highest level of animal care and guest experiences by engaging cast to build a culture of progressive animal training and enrichment. Animal, cast, and guest safety are always top considerations in the development and implementation of all training and enrichment initiatives. The behavioral husbandry programs are fully integrated into daily animal management and are both proactive and dynamic in nature. Animal keepers, managers, veterinarians, nutritionists, and scientists all contribute to the success of the behavioral husbandry programs.

Mission: We build capacity for successful application of behavior-change strategies by our animal care partners through internal education and development. We collaboratively facilitate achievement of behavioral goals through multiple partnerships. We share what we learn with our colleagues in the zoological industry through professional service and dissemination.



Marabou Guest Interaction Training



White-Cheeked Gibbon Brachiating



Meerkat Training

As we have worked to execute our vision of science-based behavioral husbandry, we have encountered many examples of the need for reconnection with scientific evidence. We have worked on these topics one by one with our animal care staff, and we will be sharing them with you in future installments of this series. Topics include variable schedules of reinforcement, conditioned reinforcers, labeling behavior, timeouts, and jackpots. We look forward to giving you a window into our journey as we continue to learn together. 🐪



Kenya Sand Boa Grass Flat Enrichment